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REAL ESTATE VALUES IN BOSTON.

By Henry Whitmore.

The method employed in assessing real estate in the city of Boston, and the conditions under which this work has been done for nearly a score of years, have been quite uniform, so that a study of the changes in valuations of property throws more light on the fluctuations of actual market values than such statistics usually do.*

From 1876 to 1895, inclusive, the ward lines of the city have been the same, and there are, therefore, a score of assessments covering the same territorial divisions of the city, furnishing a period of sufficient length to make the results of a comparison of some value. Unlike most of the large cities of the country, the assessments in Boston are supposed to be the full market value of the property in ordinary times and under usual conditions. That the city's valuation is the full market value is not claimed, for the assessors keep on the conservative side, and it is probably safe to say that the assessments are only about 80 per cent of what the real estate would bring at sale. As this was the proportion in 1876, it will be seen that the gains or losses, according to the assessors' figures, justly represent the pro-

* A portion of this paper is based upon an article recently prepared for the Boston *Herald*, Dec. 2, 1895.

portionate change in real values. Thus we have a long period of years and the same proportion of assessment to value, giving a fairly good basis from which to study the fluctuations in land values in a large, wealthy, and prosperous American city. As a State census was taken in 1875 and another in 1895, a comparison of the growth in population with that in real estate valuations, covering approximately the same period of time, is possible.

Although the last census was taken by different ward lines from that of 1875, the figures here used show the population by the old wards. This arrangement was based on the preliminary report of the State Bureau of Labor Statistics. The revised estimate, while increasing slightly the total number of inhabitants, does not alter the first sufficiently to invalidate the comparison made, and the population by old ward lines, according to the final count, is not at hand.

It should, perhaps, be stated that in 1876 the valuations were higher than for several years following. Neither were they so high as in 1875, the effect on real estate of the panic of 1873 not reaching its extreme limit until 1880, from which date they began to rise again. But any study of values should take in bad as well as good times. As there was also a panic in 1893, and as the period chosen is the longest upon which a comparison can be based, it seems a proper one.

Perhaps the most striking part of the results obtained by this study is that relating to the values of the land alone. In view of the constant talk of the "unearned increment" of vacant land, these figures are especially significant, although occupied as well as unoccupied land is included.

In 1876 the total real estate valuation of the city was $526,157,900; today it has risen to $744,743,550,— an increase of $218,585,650, or 41.5 per cent.

The population has increased from 341,919 to 494,205,— a gain of 152,286, or 44.5 per cent. Allowance being made for the fact that the population increase covers twenty years to nineteen for the valuation, it will be seen that the number

of inhabitants and the total real estate valuation of the city have increased in about the same proportion.

Land values alone have risen from $320,133,375 to $433,588,800,— a gain of $113,562,325, or 35.4 per cent. As the population increased 44.5 per cent, it follows that the land in the city of Boston, despite a vast amount of filling and development, is worth less per capita than it was in 1876.

The value of the buildings has increased $105,023,325, being $311,154,750 this year. This is a gain of 50.9 per cent and larger than the population. Buildings have increased over one-half, while land gained only a little over one-third in value.

The valuations by wards in the two years being of little interest outside of the city, they are omitted here, but the gains and losses, as shown by the accompanying table, tell a good deal of the social changes, and these are largely typical of those in other cities.

GAINS AND LOSSES BY WARDS.

	Land. Gain or Loss.	Buildings. Gain or Loss.	Total. Gain or Loss.
Ward 1	$823,275	$2,986,075	$3,809,350
Ward 2	146,150*	947,750	801,600
Ward 3	768,900	944,100	1,713,000
Ward 4	842,200	1,064,900	1,907,100
Ward 5	56,100	1,324,900	1,381,000
Ward 6	5,261,900	4,066,900	9,328,800
Ward 7	5,798,400	1,666,700	7,465,100
Ward 8	397,500	818,500	1,216,000
Ward 9	615,100*	1,196,500*	1,811,600*
Ward 10	45,380,100	4,418,700	49,798,800
Ward 11	25,762,700	19,867,800	45,630,500
Ward 12	5,176,600	4,807,200	9,983,800
Ward 13	1,026,700	1,269,700	2,296,400
Ward 14	703,400*	2,772,400	2,069,000
Ward 15	465,700*	1,110,800	645,100
Ward 16	242,900	973,600	1,216,500
Ward 17	1,385,900*	658,800	727,100*
Ward 18	354,300*	761,800*	1,116,100*
Ward 19	321,900*	1,281,900	960,000
Ward 20	1,866,800*	6,582,600	4,715,800
Ward 21	67,500	9,262,700	9,330,200
Ward 22	15,442,300	9,592,100	25,034,400
Ward 23	3,627,900	8,691,700	12,319,600
Ward 24	4,484,700	16,380,500	20,874,200
Ward 25	4,261,900	5,482,300	9,744,200
Totals	$113,562,325	$105,023,325	$218,585,650

* Loss.

Measured by the assessors' figures, the land in one of the East Boston wards, Ward 1; in Ward 9, Beacon Hill; in two of the three South Boston wards, 14 and 15; in two of the three South End wards, 17 and 18; in as many of the four in Roxbury, 19 and 20, the land is actually less valuable than it was in 1876. Thus, in 28 per cent of the wards of the city has the valuation of the land decreased.

In most cases the cause is not far to seek. Beacon Hill has lost its one-time proud position of the home of the wealthiest classes, who have moved to the Back Bay, which shows the enormous gain in land values of $41,000,000. One by one, as the older members of the families living on the hill die, their former residences are converted into boarding and lodging houses. Clubs, schools, and a few apartment houses have invaded the sacred precincts of the hill, and here and there are to be found an architect's chambers, while the easterly portion of the ward contains many law offices.

A score of years ago the South End, in a degree, was the home of people of wealth, largely those whose homes had been in the West and North Ends, whence they had been driven by the rising tide of people of Irish extraction, who have since been displaced in turn by the Italians and Hebrews. The South Enders of twenty years ago have largely scattered, some going to swell the ranks of the Back Bay dwellers, and others moving to Roxbury and the suburbs. Dwelling houses which cost large sums of money, and were among the handsomest in the city, have been deserted by their owners, and now house strangers from the country, the suburbs, and foreign lands.

Another tide of North Enders has followed the first into the South End, displacing the former settlers. The second contingent, while it did not have the wealth of the first, still had tastes and the desire to gratify them, beyond the latest comers into the North End, and from which they have been driven, as they previously drove the original settlers in Wards 17 and 18. Fashion and the demand for new houses,

which could not be met because the land had been so thoroughly built over, were the forces which first built up and then pulled down the South End. As the Back Bay was but the extension of the original and ultra-fashionable neighborhood, and as it offered a great area of available land, it benefited by the social misfortunes of the other.

The movement in South Boston has been of a similar nature, the advent of the tenement house forcing the owners of the expensive places on the higher parts of the peninsula, as they saw the tenement districts isolating them from the rest of the city, to abandon their homes. Dorchester particularly has been the gainer at the expense of South Boston. Ward 13, which does not show a loss in values, is the manufacturing portion, and much land has been made by the filling of flats, and many new factories and warehouses erected.

In only two of the wards has there been a decrease in the value of the buildings. Again, Ward 9 is in the list of the decadents, having lost $1,196,500, and Ward 18 $761,800. Both of these were pretty well built over at the beginning of the period under consideration, so that the natural decrease because of age and wear and tear has not been made up by new construction. Neither have the districts been affected by the tide of business, as in the case of Ward 6 and other down-town wards, where old buildings have given place to new and better ones, thus adding to the valuation.

As might have been expected, Ward 10, the great retail business district, leads the city in the land gain, with over $45,000,000, or more than the two Back Bay wards combined.

Made up as Boston is of several cities and towns, and the original town of Boston itself having been divided into neighborhoods, each having a more or less separate social existence, perhaps the most interesting study that can be made is one of the growth of the several generally recognized districts in the city.

The city of Roxbury was annexed to Boston on Jan. 1, 1868. The boundary line at the Charles River was consid-

erably east of Massachusetts Avenue, but Ward 19, old lines, lay partly within the limits of Boston. The division of wards between the city proper and Roxbury here used includes in the latter Wards 19, 20, 21, and 22, the added territory in 19 being offset by the loss of part of 11. Dorchester joined Boston in 1870, and in 1874 Charlestown, Brighton, and West Roxbury came in.

The following table gives the land and the total valuation of the city by districts in 1876: —

District.	Land.	Total.	District.	Land.	Total.
East Boston....	$8,595,475	$16,841,000	Roxbury.....	$42,200,300	$66,134,000
Charlestown....	14,953,800	24,937,900	West Roxbury	11,755,500	24,822,700
City proper.....	205,295,900	387,786,600	Dorchester....	12,737,400	20,489,500
South Boston...	17,747,600	52,691,800	Brighton.....	6,847,400	9,454,400

Here are the gains or losses in 1895 compared with 1876: —

District.	Land.	Buildings.	Total.
East Boston.....	$677,125	$3,933,835	$4,610,950
Charlestown.....	1,667,200	3,333,900	5,001,100
City proper.....	85,664,800	35,349,900	120,984,700
South Boston.....	142,400*	5,152,900	5,010,500
Roxbury.....	13,321,100	26,719,300	40,040,400
West Roxbury.....	3,627,900	8,691,700	12,319,600
Dorchester.....	4,484,700	16,389,500	20,874,200
Brighton.....	4,261,900	5,482,300	9,744,200

* Loss.

The most noticeable thing about this table is that in only one district, the city proper, does the increase in land values exceed that in buildings. In spite of the absolute decrease in values in three of its wards, as already shown, the land has increased in valuation two and a half times as much as the buildings.

The city proper has the enormous total increase of nearly $121,000,000 to its credit,— three times that of Roxbury, nearly six times that of Dorchester, and almost ten times

that of West Roxbury, all of which are largely residential districts.

Having studied the absolute changes in valuations, it may be of interest to see what the several districts have done as compared with themselves in 1876; and in order to make the changes the more apparent, the gains and losses have been reduced to per cents. With them are placed the percentages of gain in population, it being remembered that the valuations are figured on the years 1876 and 1895, while the population is calculated on that of the years 1875 and 1895, therefore giving the latter the advantage of 20 years' increase against 19 for the assessments.

Before considering the percentage of gain it may be of interest to see how much each district has gained in population.

	1875.	Gain, 1895 over 1875.
East Boston...	29,347	13,081
Charlestown...	33,556	6,285
South Boston..	54,147	12,747
City proper....	135,340	13,886
Roxbury	57,552	49,649
West Roxbury	12,315	20,439
Dorchester....	13,462	27,403
Brighton.....	6,200	8,797
Totals.....	341,900	152,286

Here are the gains and losses reduced to per cents.

District.	Land.	Total.	Population.
East Boston...	7.8	27.0	44.5
Charlestown...	11.1	20.0	18.7
City proper....	41.7	35.0	10.2
South Boston..	.8*	15.0	23.5
Roxbury.....	31.5	60.0	86.2
West Roxbury	30.8	69.0	165.9
Dorchester....	35.2	101.0	203.5
Brighton.....	62.2	103.0	141.8
Whole city...	35.4	41.5	44.5

* Decrease.

In but one instance has the land valuation increased as fast as has the total, and that is in the city proper. In most of the districts the total has grown more than twice as rapidly as the land; and in South Boston, while there has been an actual loss of 0.8 of a per cent, the total valuation has gained 15 per cent.

While it is an old saying that figures won't lie, there are so many elements that enter into the growth of a large city that conclusions drawn from statistics alone may be misleading. However, there seem to be several points pretty clearly brought out by the figures which have here been presented.

While the total valuation of the city as a whole has grown in just about the same proportion as the population, it is only in the city proper and in Charlestown that the valuation has increased more rapidly than the population. In the latter there is a difference of only 3 per cent in favor of the valuation, and this may be credited to the large increase in the business interests of the district. In the city proper the valuation has grown more than four times as rapidly as the number of inhabitants. As this district includes the great wholesale and retail as well as the most fashionable residential sections, it is plain why this is true. At the same time that the number residing in the city proper has grown very slowly, the great increase in the other parts of the city and the suburbs has benefited the real estate of the down-town district, for in it are the offices, stores, and workshops of tens of thousands who make their homes elsewhere. So far as its effect upon real estate values is concerned, the population of the business district, which is a large part of the city proper, is that which is found there during the daytime, and any comparison between valuation and population, to be of any use, should be made on an enumeration taken, say, at noontime.

Turning to the outlying parts of the city, it will be noted that in none of them does either the land or the total valuation anywhere near keep up with the population. In Dor-

chester, which shows the greatest gain in inhabitants, having trebled in a score of years, the total gain in values has been only a trifle over 100 per cent, while the land has increased but little more than a third.

A like discrepancy, more or less pronounced, exists between the land and population gains in other districts, so that it is clear that in suburban wards the value of the land cannot be expected to increase as fast as the population. It might be said that this is true of all residential districts, but the following table, giving the percentages of gain in 1895 in total and land valuation over 1876, and population compared with 1875, shows that it is not of the two Back Bay wards, 11 and 22: —

	Land.	Total.	Population.
Ward 6.....	18.2	22.3	2.9
Ward 10.....	79.8	60.3	22.5*
Ward 11.....	108.0	96.5	63.6
Ward 22.....	135.6	160.9	85.0

* Decrease.

In the case of the Back Bay, however, it must be remembered that much of the land assessed today did not exist in 1876, having been filled since at great expense, and that to rightly measure the increase as compared with the population, the cost of this filling should be known.

There is another thing worthy of note in regard to the increase of land values. It is generally accepted in real-estate circles that vacant land should double in value once in every ten years, to make the owner whole. That is, at the end of the first decade it should be worth 200 per cent of what it was at the beginning, and at the end of two decades 400 per cent of what it was at the beginning of the score of years. It will be seen at once that there is no district in the city, and no ward, in which this condition has been approached. It is true that the figures here given include improved as well as unimproved land, but this makes it only the worse for vacant land, for land without

anything on it is worth, simply as so much ground area, more than if it is encumbered by an old building.

This exhibit, covering, as it does, a period of 19 years and about 43 square miles of territory in a growing and prosperous city, furnishes considerable food for reflection. Measured by the assessors' figures, there has not been on the average, in the city of Boston, the tremendous unearned increment of land that a certain class of reformers are in the habit of referring to. Moreover, in two of the districts the increase has not been enough to pay the taxes. In Roxbury, West Roxbury, and Dorchester, with large areas of vacant land, it will not very much more than pay taxes and interest on the taxes, to say nothing of a fair rate of interest for the money invested.

Here is another interesting fact: Next to Brighton the largest increase in land values has been in the city proper, where the largest part of the land has been improved, and presumably returning a fair amount of interest on the investment. Therefore it follows that the profit which has been made in land has been in improved rather than unimproved land.

Hundreds, possibly thousands, of instances might be given of large amounts made in vacant land, but the remark just made applies to the average. What misleads a great many who discuss the tax question is that isolated cases, — and there are plenty of them in Boston, — where land has increased enormously in value within a few years, are allowed to represent the city as a whole. In other words, it is the old story of drawing conclusions from too insufficient data; and the effort has been made in this article to furnish data broad enough to be of use in the study of such questions. It should be remembered that no account has been taken of the expenditure for streets, sidewalks, sewers, and water pipes, which in many cases has been borne by the land itself in the suburbs. Were these amounts deducted it would leave a still smaller net unearned increment.

It seems to me that the figures given above throw some light on the subject of taxation, and, without entering upon any extended discussion, I would like to call attention to two or three phases of the question.

We have seen that the increase in the value of the land between 1876 and 1895 was $113,562,325. During that period, including both years, the expenditures of the city were $230,490,089. Therefore, if it had been possible to secure all the net increase in the land values, the revenue would have been considerably less than half that enjoyed by the municipality under the present system of taxation. Part of the amount stated was received from liquor and other licenses, but a generous estimate of what they have been, added to the land increase, would still leave the city short something like a hundred millions. This is only a rough estimate, but approximates near enough to the facts for the purpose of this calculation.

Let us test the matter in another direction,— that of ground rental. It is a matter of speculation as to what changes in value would follow the taking of the entire rental of the land each year by the government, and the calculation here will be based upon present valuations. Four per cent seems as high an average return for ground rent as it is wise to count upon. At this rate the ground rent of the city would be $17,343,552.

The last report of the assessors, that for 1894–95, gives the value of the vacant land and marsh as $54,094,750. By deducting 4 per cent on this from the total ground rental, the return on occupied land is found to be $15,179,762.

As the estimated income of the city in 1895 was $14,013,-043, on the estimate of ground rental above the city would have had through it a larger income by $1,166,719 than it received under the existing system of taxation. As licenses for the sale of liquor, fees, and similar sources of revenue, might continue under a ground rent system, their estimated return, $1,573,665, should be added, raising the surplus to

$2,740,384. The city's share of the corporation tax received from the Commonwealth, amounting to $900,000 in round numbers, must be subtracted, leaving a net surplus of $1,840,-384.* There is still to be reckoned the amount which the city would have to pay the State to make up its loss of tax on certain personal property. What it would have been in 1895 I have not determined, but in 1893 it was in round numbers a million dollars. This would leave a surplus in favor of the rental system of raising revenue of less than $1,000,000, provided values remained as they are, which, in my opinion, would not be the case. What the changes would be is foreign to the scope of this article, however.

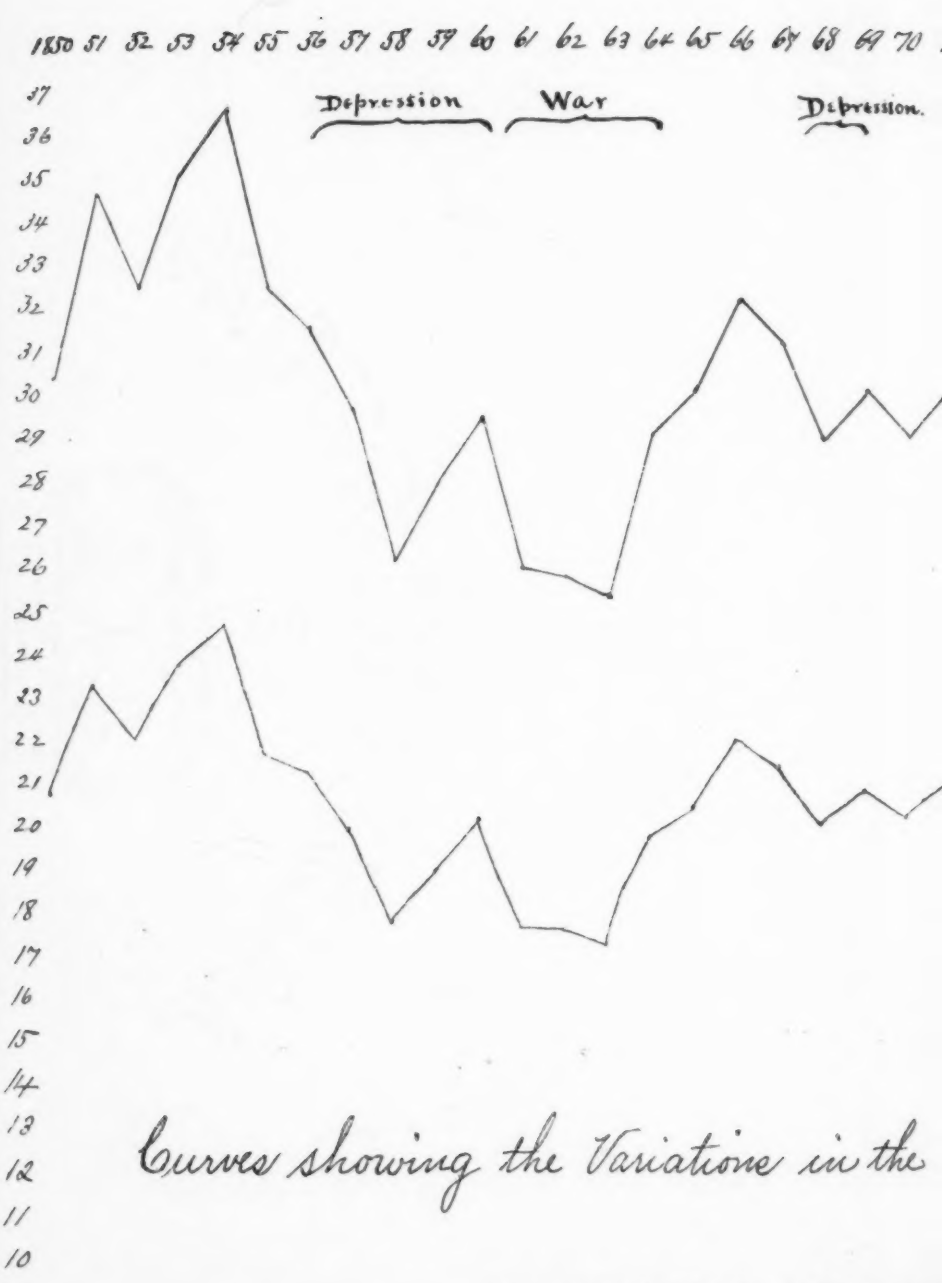
An estimate made by the writer, and based on the valuations and income of the city in 1893, showed that if all the revenue were derived from a tax on real estate, land and buildings, the rate per thousand would have been $19.70, and on land alone $33.40, instead of $12.80, as it was with personal estate taxed.† This estimate made no allowance for any change in values which might follow the alteration of the tax system.

In connection with this question of city expenses and revenue from land, it may be interesting to note that in a paper read before the Association of Massachusetts Assessors in 1893, Mr. Thomas Hills, for twenty-five years chairman of the Boston Assessors, came to the conclusion that in 1892 there would have been a deficit of $5,600,000, or over 45 per cent, in the city's revenues, if the single-tax plan had been in operation. It is unnecessary to follow his calculation here, except to say that he cut the valuation on which ground rentals could be estimated nearly in half, reducing it to $200,000,000 in round numbers. This result was reached by throwing out vacant and marsh lands and flats, and by allowing for depreciation in values following the increased burden of taxation.‡

* These figures are taken from the report of the Auditor of the city of Boston for the financial year 1894-95, the last one issued to date.

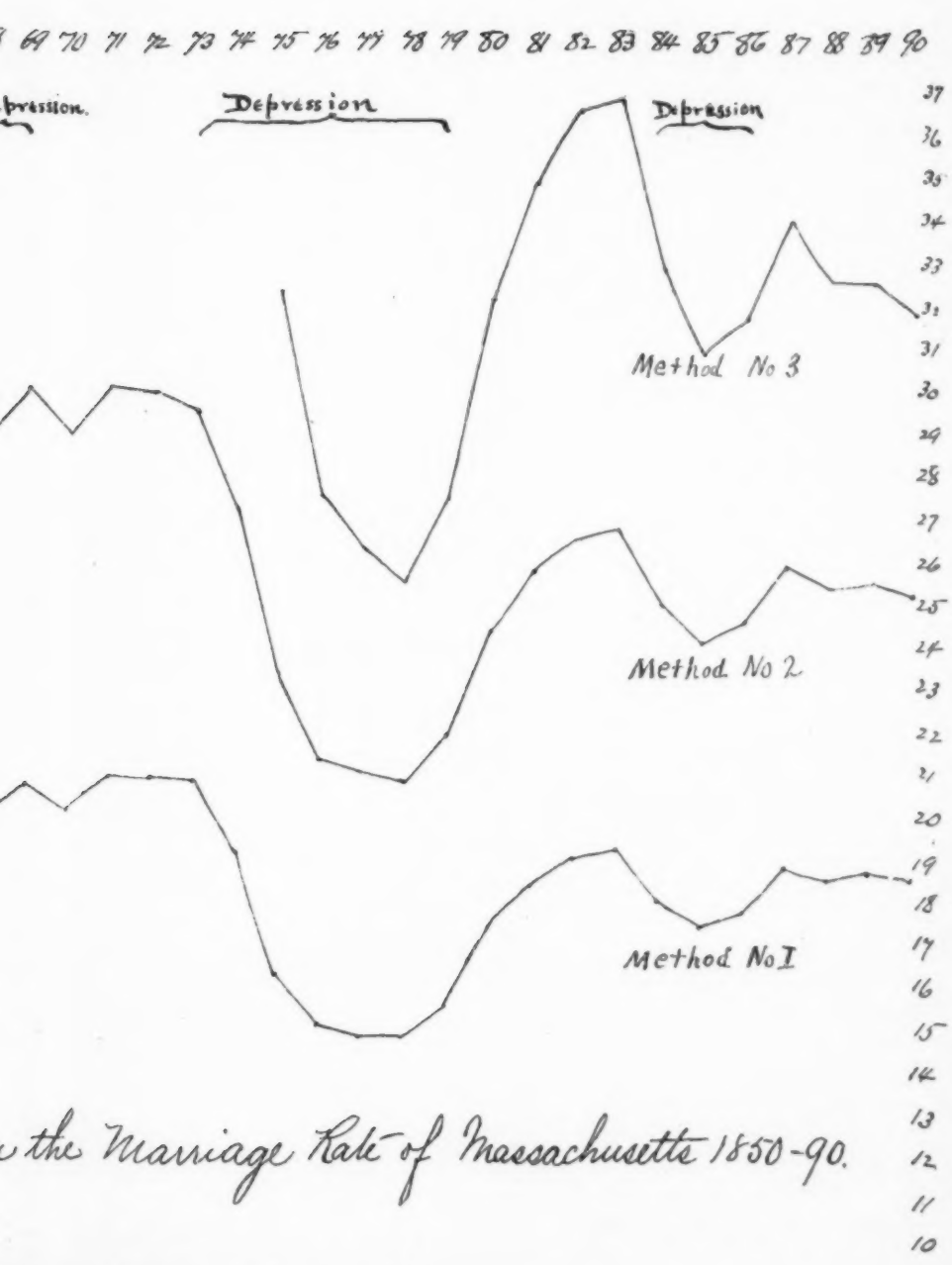
† Boston *Herald*, March 11, 1894.

‡ *Modern Taxation and the Single Tax*, by Thomas A. Hills. Printed by the Association of Massachusetts Assessors, Boston, 1894.



Curves showing the Variations in the

(To illustrate article by F. S. Crum, on Marriage Rate o



the Marriage Rate of Massachusetts 1850-90.

rriage Rate of Massachusetts, in No. 32, December, 1895.)

The writer wishes to acknowledge the courtesy of Mr. Joshua S. Duncklee, chairman of the Assessors of Boston, who kindly furnished the valuations by wards in 1876 and 1895, and the gains or losses between those years, upon which this article has been based.

Remarks by Mr. James R. Carret.

In this paper Mr. Whitmore has made an interesting study of the increase in land values in Boston during the period from 1876 to 1895, as shown by the assessors' books, and has shown the insufficiency of this "unearned increment" to meet the expenses of government during that period. His demonstration is complete, but as far as it is intended as a criticism on the proposition of those reformers who favor a single tax on land values as the sole source of public revenue, it falls to the ground, for that is not their proposition. They propose to take for public uses the ground rent of land, not the increase in land values from year to year. What is ground rent?

Men must use land in order to live. In a civilized state they must have exclusive occupation of separate pieces of land in order to secure the proceeds of their own labor. The right of exclusive occupation is given and secured to individuals by the State, and is in fact a privilege. When in a community the land is all taken up, then anyone who wishes to obtain land to use can only do so by obtaining from some owner a transfer of his privilege in whole or in part, paying therefor with the proceeds of his labor. Then "land values" exist, as the common term is, and it is a convenient one.

But to be accurate, land has no value. It is the privilege of exclusive occupation of particular pieces of land that has value, and it is for that privilege that men pay. The annual value of that privilege the economists call "ground rent." Whether it be greater or less depends upon the demand for the use of land, and that demand depends upon the presence of population. It is ground rent itself that is the "unearned increment," in John Stuart Mill's phrase,— a gain or return obtained by a man which is not the product of his own labor.

What, then, is "land value"? For with the explanation made above I shall continue to use the common term. It is the selling value of land, for it is the common practice with us to transfer the fee

or ownership. In other words, it is the net capitalized ground rent, bearing the same relation to the latter that capital does to interest. The price that a man will pay for a piece of land depends upon the net return that he can get for the use of it. He will pay an amount of capital such that the net ground rent will equal the average net return from that amount of capital put into other investments. Ground rent, or gross ground rent, as perhaps it would better be called, bears no relation to taxation, for it is due to demand; but net ground rent is affected by taxation, for taxes are a necessary incident of ownership of land, and have to be paid out of what is obtained for its use,— that is, from ground rent.

Perhaps this explanation is too long, but it seems to be called for by the contents of Mr. Whitmore's paper, in which he has used the term "unearned increment" to describe the increase in selling value of land, arising from the increase of ground rent due to increased demand by reason of increase of population, and has given as "ground rent" only the net ground rent.

With this explanation I proceed to give some figures as to the ground rent of Boston, based upon some of the assessors' valuations during the same period, 1876 to 1895.

Since 1889 the assessors have made fuller reports than was formerly their custom, under an ordinance which then went into effect. From these reports, first made in detail for the year 1889, I have obtained the statistics from which I have prepared the following table. I have followed Mr. Whitmore's estimate that the assessors' valuations are 80 per cent of the true value of the land, and have taken his estimate of the net ground rent as 4 per cent. Of course, as has been intimated above, the gross ground rent in any year is found by adding to the net ground rent the rate of taxation in that year: —

Year.	Tax Rate, per Cent.	1. Land Value, Assessed.	2. True Land Value, 20 per Cent Added.	3. Tax on Land Value, Assessed.	4. Total Taxes Assessed on Real and Personal Estate and Polls.*	5. Gross Ground Rent Based on Assessed Land Value.	6. True Gross Ground Rent, Based on True Land Value.
1889	1.29	$349,329,875	$419,195,850	$4,506,355	$11,221,300	$18,479,550	$22,175,460
1890	1.33	365,548,875	438,658,650	4,861,800	11,999,909	19,483,755	23,380,506
1891	1.26	381,302,125	457,562,550	4,804,407	11,812,686	20,056,492	24,067,790
1892	1.29	399,189,175	479,027,850	5,149,549	12,987,642	21,117,144	25,340,573
1893	1.28	417,389,275	500,867,130	5,342,583	13,223,776	22,038,154	26,445,785
1894	1.28	422,145,950	506,575,140	5,403,468	13,140,923	22,289,306	26,747,167

N. B.— I have thrown off the cents in every case, adding a dollar where the cents exceed fifty.

* Column 4 includes the taxes assessed on the value of land and value of buildings (separately assessed by the assessors in Massachusetts, as required by law), on personal property and on polls, and the taxes received by the city in respect of vessels engaged in foreign trade, and its share of the corporation taxes and bank taxes collected directly by or paid to the State.

It will be seen from these tables that the gross ground rent even on the assessed land value is very largely in excess of present receipts, and, if taken on the true land value, is substantially about double the amount now obtained by taxation.

I have taken no note of the income of the city from various fees, licenses, and miscellaneous sources, but these fall very far short of raising its income to the level of the ground rent on the assessed land value. The City Auditor's Report for the year 1894–95, the only one that I have at hand at the time of completing this paper, shows that the income of the city, from sources other than those mentioned in Column 4, was in that year $1,729,654. Of this sum, the five items of receipts from East Boston ferries, interest, liquor licenses, rents, and miscellaneous county receipts, make up $1,397,698.

Mr. Whitmore seems to think that no account should be taken of the ground rent of vacant land. As it has a selling value, of course it is capable of producing ground rent. Owners now prefer to take that in holding the land for higher selling prices. Under the application of the single tax a very large part of this vacant land would be brought into use, and of course would be productive of taxes. I have not added the figures for the year 1895, as the assessors have not yet published their report for that year; but I think that the figures for the six years that I have taken are a sufficient indication of what the single tax will do in the way of producing a sufficient revenue.

Remarks by Mr. Dudley P. Bailey.

In the foregoing calculations no account has been made of one important element, namely, the depreciated condition of the currency in 1876. The country was at that time doing business under an irredeemable paper currency, the depreciation of which, as measured in the average of prices as compared with 1860, was about 18 per cent; or, to put it in another way, taking 1860 as the standard, the average of prices was inflated to the amount of 22 per cent. Not all

articles were affected equally, real estate being among the last to feel the effect of inflation as well as of contraction. That this is an element of no small importance is evident by a comparison of the real estate values from 1860 to 1879. The real estate valuations of the districts which now constitute Boston in 1860, 1870, 1875, 1876, 1879, and 1895, compare as follows (the valuations of 1861 being taken in Brighton and West Roxbury, those of 1860 not being accessible): —

1860	$206,893,517.	
1870	396,147,928.	Increase over 1860, 91 per cent.
1875	558,941,000.	" " 170 "
1876	526,157,900.	" " 154 "
1879	428,777,000.	" " 107 "
1895	744,751,050.	" 1879, 73.7 "

The assessors' valuation of real estate in Boston reached its maximum in 1875, and its lowest point in 1879. The prolonged depression after the crisis of 1873 had by 1879 substantially eliminated all inflation of prices, and in that year, for the first time after 1860, we come to bed-rock values. The rate of annual increase from 1879 to 1895 does not differ very materially from the rate between 1860 and 1879. No attempt is made in this calculation to estimate the effects of the world-wide currency crisis prevailing since the demonetization of silver which commenced with the revision of the German coinage system in 1871, though there can be little doubt that it has had an important bearing in giving prices a downward tendency. The average of prices in the United States in the seven years 1885–92 was but 94.7 per cent of the prices prevailing in 1860, and in England the prices of 1860 and the eight years 1885–93 bear the proportion of 99 to 70.

Remarks by Mr. Henry Whitmore.

It was not my intention, in referring to the "unearned increment" in a certain period of years, to say that the single tax advocates sought to raise revenue by taking it. This was introduced simply to show that the increase in land values was not so large as is usually claimed, and to show it by a comparison with the revenues of the city under the present tax system.

The ground rent that would be received is a matter of opinion, and I am very glad to have had Mr. Carret's, which is certainly entitled

to great consideration. I would say, however, that he assumes that the 4 per cent which I have taken was a net rent, while I did not thus qualify it, meaning it to cover the entire return from the land.

This amount, it seems to me, is all that the ground would earn on its present valuation. Some undoubtedly earns this and more, and the current taxes as well, while much that is encumbered with old buildings will not earn 4 per cent, leaving taxes out of consideration. The land thus situated is in many cases among the most valuable in the city. It may be said that if new buildings were erected that the earnings would be increased. But rent, as well as other prices, is governed by demand and supply, and the immediate improvement of all the land in the highest priced districts of the city would bring down the earning power of that already so improved.

If all advance in values was taken from an owner each year, in the form of rent, the depreciation in the buildings would make improvement decidedly unprofitable, unless the buildings were rated much nearer their cost than is now the case. If that were done the amount earned by the land would be less, for a larger amount would have to be credited to the buildings, or charged off for their depreciation.

Vacant land in the city has a value, in the commercial sense of the term, because of its future ability to earn through improvement. Until that improvement comes it has no rental value. There is a vast amount of vacant land in the city that it would not pay to build upon if given rent and taxes free, and any improvement in excess of the demand for buildings would decrease the rental value of the land already improved. Therefore it seems to me proper to exclude vacant land.

Mr. Carret presents figures based on the true market value of the land. But from the reasons stated above, which would decrease the earnings of the land, and others, which cannot be stated in the narrow limits of this paper, I believe he would be disappointed in the return, and that my original estimate of 4 per cent on the assessed values is a generous allowance.

ETHNIC INFLUENCES IN VITAL STATISTICS.

By W. Z. Ripley.

A peculiar contribution to the demography of France, of interest to students, showing at once the dangers and possibilities of the application of anthropology to statistics, is contained in the December number of the *Revue d'Economie Politique*. The argument in this is at once novel and simple. The low birth rate in France in recent years is ascribed to infecundity, due to the crossing of two dissimilar branches of the Aryan stock, which have been in contact for centuries and yet have never completely assimilated. One of these is short in stature, dark-complexioned, broad-headed, and is technically known as the Keltic stock. It is generally assumed to be the more primitive in its present distribution. The other type is blonde, tall, narrow-headed, of the same stock as the Scandinavian and the North German. This branch is more recent and has invaded France almost within historic times. Not only do these two types differ physically; their mental characteristics are also dissimilar. The Kelts are conservative and cling to the soil with great tenacity. The Germans tend to be more energetic and progressive. For these reasons the intermixture of the two stocks varies very greatly in different parts of the country, following in a curious way the geology and topography of the several districts. In those regions easy of access from the north, and at the same time fertile and attractive in character, the Germanic element has become strongly mixed with the primitive Kelts; but in those parts of France which are economically unattractive and easy of defence, the Kelts still remain practically unmixed, as, for instance, in Savoy, in Auvergne, and to a lesser extent in Brittany.

Our author compares this distribution of intermixture in the several parts of France with that of the birth rate, tracing

certain rough correspondences between the two.* Thus, in those regions where any of the ethnic stocks are pure the birth rate tends to be higher than in the areas of intermixture. The argument, then, rests upon the fact of this correspondence, and upon certain biological principles which (in the author's view) determine the fertility of marriages. This theory, which will be examined later, is, in short, that the crossing of stocks tends to infertility, resulting in a reversal to either one of the original types and the extinction of the other. In this case it is the Keltic, the dark, broad-headed stock, which in his opinion is gaining on the other. This means the final extinction of the Germans, and the perpetuation of those peculiar mental traits, — conservatism, attachment to the soil, and the like,— which are peculiar to the Kelts; so that, "in reality, the present depopulation of France is only the acute and final phase of the elimination of Homo-Europaeus"— of the Germanic type.

That the fact of crossing is also indicated by a general decrease in the proportion of males to females born — following Westermarck's hypothesis that crossing tends to produce an extra excess of females — is also suggested, though not followed out. For example, it is shown that the number of boys to 100 girls born has fallen from 108 in 1770–78 to 104.7 in 1880–90, and for illegitimates from 106.7 to 103 in the same period.† Unfortunately, our author does not give the data for this by departments, and does not work out his results in detail. Such study would have given a quantitative measurement of the correctness of his theory, if this hypothesis of sex were true. But assuming that this general phenomenon, the relative decrease of males born, is espe-

* Maps of the distribution of the birth rate in France will be found in Levasseur, *La Population Française*, II, p. 36. Intermixture measured by cephalic indices is mapped by Dr. Collignon in *L'Anthropologie*, I, 1890, p. 204.

† The same phenomenon is strongly marked in England and Wales, the proportion of boys to 100 girls born falling regularly from 105 in 1838-47 to 104.4 in 1858-67, to 103.9 in 1868-77, and to 103.8 in 1878-87. William Farr, in *Fortieth Annual Report of Registrar-General*, p. xxi.

In Belgium the same decrease is marked. *Ann. Stat. de la Belgique*, xxii, 1891, p. 85.

cially marked in those parts of France where the Teutonic stock is strongest, our author asserts that this points to the final extinction of that Germanic stock so affected, since there is an insufficiency of males of that type to propagate its due proportion of the yearly increase in population. As modern industrialism and its incident migration and crossing of stocks tend to make this phenomenon more common, the movement in this direction ought to be accelerated year by year.

The intensity of the social selection which is taking place is next measured by a comparison of the anthropological characteristics of the several types in each department of France, namely, the natives of the department, and those born outside who have immigrated. From a slender statistical basis it is shown that in all cases the migratory portion of the population possesses one of the most constant characteristics of the Germanic stock,— the long and narrow head. The following tables indicate the basis of this argument.

FOR THE MEDITERRANEAN DEPARTMENTS.

Departments of Origin.	Number of Immigrants.	Cephalic Index*	
		Of Immigrants.	Of the Departments.
Gers	3	82.25	85.71
Ariege	6	82.59	82.89
Pyr. Orient	8	81.80	78.63
Aude	8	79.08	81.05
Tarn	11	80.04	83.72
Aveyron	25	84.04	85.50
Lozère	11	87.13	87.87
Ardèche	5	83.40	85.24
Gard	24	82.43	83.12
Vaucluse	3	80.27	81.53
Bouches-du-Rhone	4	82.77	82.22

* The Cephalic Index is the breadth of the head measured in percentage of the length. A high index signifies a broad and short head. The low indexes characterize the Germanic long-heads, which in Hanover have an index of 78 to 80. The index for the pure Kelt is often over 85; in the Tyrol it rises above 88.

FOR THE BRETON DEPARTMENTS.

Departments of Origin.	Number of Migrants.	Cephalic Index		Number of Natives.
		Of Migrants.	Of the Departments.	
Mayenne.....	7	82.3	84.10	100
Mauche.....	5	82.2	83.10	919
Cotes-du-Nord.....	9	82.9	83.72	2,023
Finisterre.....	13	81.6	82.83	238
Morbihan.....	11	83.7	82.62	173
Loire-Inferieure....	6	83.3	83.77	160

It will therefore be observed that, if these tables are correct, they tend to show that the migratory elements in the several departments of France are narrower-headed than the sedentary natives in each case. This migrant population is also said to be characterized by a considerably greater cranial capacity, a taller stature, and a lighter color of skin and hair, all of which attach to the Germanic type.* This is the one, be it observed, that all anthropologists agree has come to France in recent times and has submerged the more primitive stock. The whole movement, therefore, indicates an absorption of the Germanic invader by a process of social selection. In the south of France, however, it is the Keltic stock which represents the invading element which has displaced the remnants of the Cro-Magnon race. But the fact of social selection would be operative none the less, in which the Keltic type is everywhere gaining on its competitors.

All of this is indeed an interesting illustration of the possible application of anthropology to the study of demography, enjoying the advantage, moreover, that it is susceptible of exact statistical treatment. Yet it is unfortunate that so many of these particular conclusions should be open to adverse criticism. Nevertheless, the article in question is exceed-

* It should be noted, however, that in the first table the intermixture is not of the Kelt with the long-headed blonde German type, but with an entirely distinct strain which, while long-headed, is very dark-complexioned. This stock, purest in Corsica, Spain, and southern Italy, is known as the Iberian (Beddoe), the Mediterranean (Collignon), or Ligurian (Livi). This stock is strongly represented in the southern departments. M. Lapouge does not make this clear in his explanations.

ingly suggestive, although it is, like much of the work of our author, open to question on account of the narrowness of the statistical bases and the breadth of his speculations.

There are three points which may be especially disputed in the argument, the discussion of which may, however, indicate a field for future work in this line. These disputable points are, *first*, that the crossing of stocks tends to infertility; *second*, that a decrease in the proportion of boys to girls born is a sign of ethnic intermixture; and *third*, that the narrow-headed, blonde type is the one which more often possesses the energy and the enterprise to migrate, and especially to invade the cities, there to be exterminated, leaving the field to the brunette and broad-headed competitor, who is content to remain upon the land.

In the first place there is no basis for the assertion that the crossing of stocks, even though they be of extreme types, produces infertility.* It would be unfounded, perhaps, to assert that this is not true, but certainly no evidence exists for it at present. The old idea due to Broca's *Essay on Hybridity* is now everywhere called in question. For a detailed analysis of the evidence the reader is referred to the articles by the writer in the *Popular Science Monthly* for March and April, 1896. The whole body of exact knowledge accumulated with respect to the formation of races in Europe contradicts the theory of infertility; for England, though perhaps the most mixed of the countries of Europe, composed of the Neolithic, Keltic, Iberian, Roman, Saxon, and Scandinavian crosses, shows no corresponding decrease in fertility. There has been a fall in the birth rate, to be sure, but it is recent; while the phenomenon of crossing is shown by Dr. Beddoe and others to have been going on for centuries. The United States is the most shining refutation of this theory, where the crossing of stocks of all kinds has nevertheless been accompanied by great fertility. Even in crosses be-

* This thesis, evidently derived from M. Sanson, so contrary to the biological evidence, in our own language at least, is given in some detail in *Rev. d'Anth.*, Paris, third series, III, 1888, p. 179 *et seq.*

tween the extreme types of the American Indian and the European, Dr. Boaz has shown that the half-breed families are larger than those of the pure white or of the Indian in the same locality.* Nevertheless, it must be confessed that there is some evidence which tends to show that possibly some unfavorable influence of this kind may be exerted. Jacobs has shown that marriages between those differing in religion in Germany are considerably less fertile than marriages within the same sect. In unions among members of the same creed the number of births per marriage was found to average 5.24, while in mixed marriages of Catholics and Protestants the average was only 3.3. Less than all others were mixed marriages between Jews and either Protestants or Catholics, where the rate was as low as 1.38 births per marriage.† And it is certain that religion is ofttimes a more permanent token of race than language. Yet, despite some examples of this kind, it seems to be well established biologically that no influence is so unfavorable to fertility as continued in-breeding.

The evidence for France adduced by M. Lapouge does not bear out his theory, and the phenomenon of intermixture is not really as simple as he would assume.‡ There are in reality not two but three ethnic stocks in that country, and the areas of crossing are correspondingly more complex. It would be impossible, therefore, to trace the close correspondence which he has assumed, and to assert that this contradiction of a biological law will hold in this case. More important than all, a correction must always be made for differences of social condition and for the influence of environment. The nature of such correction will appear in the further discussion of the next argument.

Let us, then, look at the second proposition,— that a decrease in the proportion of boys to girls born is a result of

* Diagrams exhibited at the World's Columbian Exposition, many of them reproduced with text in *Verhand. der Berliner Ges. f. Anth.* Sitzung, May 18, 1895, p. 366 *et seq.*

† *Jour. Roy. Statistical Society*, London. New Series, XX, p. 246.

‡ *Vide* map of birth rate for 1866 in Levasseur, *Atlas Phys., Pol. Econ. de la France.* Paris, 1876. Plate XIII, 10.

ethnic crossing. The application of the theory of sex to the relation of the problem of social selection has great possibilities; for while self-restraint and social conditions enter into the voluntary determination of the total birth rate, we have to do with forces beyond the control of man in the factors which determine sex. The affirmation that a decrease in the proportion of boys to girls born is an unfavorable sign is in general tenable on the basis of the most recent theories of the causes which determine sex, such as those of Geddes and Thomson,* Düsing† and Westermarck.‡ All of these agree in this, that prosperity, an abundance of food, and favorable conditions of life tend to raise the proportion of females born. Hence the decrease in the proportion of boys born in France, and in England and Belgium§ as well, during the last century, might be readily explained on the basis of the improvement in the material condition of the people. Our author, therefore, should have considered not the decrease in the proportion of males to females born for all of France, but should first have studied the local distribution of the proportion of sexes born in detail, making correction for this factor of material prosperity.‖ Then he would have been in a position to deal with the second factor, which Düsing and Westermarck alike have asserted enters into the determination of the relative proportions of the sexes born.¶ This second element is that of ethnic intermixture, in which there is a large body of evidence to show that the immediate effect of crossing is to increase the relative proportion of females to males born. The prime difficulty in the investigation of this

* *The Evolution of Sex*, New York, 1890; and Art. *Sex*, in *Ency. Brittanica.*

† Carl Düsing. *Die Regulierung des Geschlechtsverhältnisses bei der Vermehrung der Menschen, Tiere, u. Pflanzen.* Jena, 1894.

‡ *History of Human Marriage.* London, 1891, p. 470 *et seq.*

§ *Ann. Stat. de la Belgique*, 1891, p. 85.

‖ The statistics of all European countries giving, however, merely the proportion of sexes born for each as a whole, never in detail, will be found in *Bull. Int. Stat. Institute*, 1894, VII, 2me liv., pp. 126-8. These totals, of course, do not really give any true relation. In Massachusetts the relation of boys to 100 girls born is about 105; and yet in Chelsea, for many years, the female births actually exceed the male; in Gloucester the same is true. This is counterbalanced by a heavy excess of males in other districts.

¶ Westermarck, *op. cit.*, p. 476 *et seq.*

question is that these two factors, material prosperity and ethnic intermixture, in most cases follow the same laws of geographical distribution; since it is particularly in the prosperous, attractive, and fertile portions of any country that the conflict of races, the competition for supremacy, and the ultimate compromise by crossing are most apt to take place.*

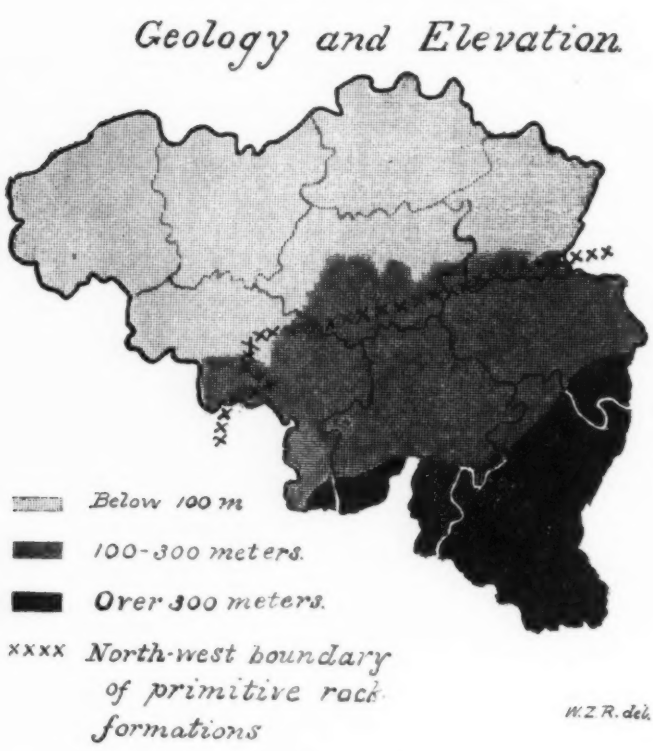
Drs. Collignon, Ammon, Ranke, Livi and others have shown that the areas of competition and of crossing are most often determined in this way. Hence, in those places where contact of race produces crossing and a high proportion of females born, there also is the material prosperity which attracted the immigrant race tending to produce the same effect; and it is almost impossible to distinguish one of these from the other, save in those few places where one may be surely eliminated. For example, Dr. Ploss† asserts that in Saxony in 1847–49 there was a progressive reduction in the proportion of females born with increase in elevation. The relation of sexes was 105.9 to 100 below 500 Paris feet above the sea; rising to 107.8 above 1500 feet. Precisely the same phenomenon will be instanced for Belgium in the following pages, except that the fertility of the soil bears a different relation to the altitude. Only by a comparison of variations of this kind may one or the other factor be eliminated.

In order to make a test of this hypothesis, let us examine the case of Belgium, which offers, perhaps, the simplest example of the action of these several causes. This country is sharply divided geologically and topographically into two entirely distinct areas. In the south and east the country is hilly, the soil is stony, but there is an abundance of minerals which makes modern industrialism possible. In the north and west the country is flat, quite fertile, though tending to sandy near the coast.‡ The first of these areas is inhabited by the Walloons, who are dark-complexioned, broad-headed,

* The general rule is that the high birth rate in France is in the poorest Departments. *Economiste Francais*, Sept. 20, 1890; editorial by M. Paul Leroy-Beaulieu.

† *Monatsch. f. Geburtskunde u. Frauenkrankheiten*, XII, p. 352.

‡ *Vide Jour. Anth. Inst.*, London, X, p. 378, for description by Dr. Beddoe.

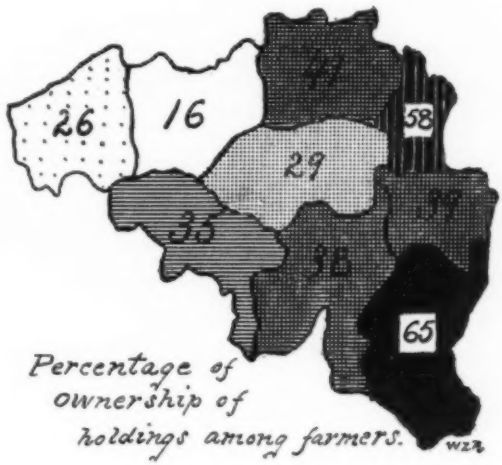


and short in stature, and who are of the same origin as the Kelts in France.* The open country, on the other hand, is inhabited by the Flemish, who are distinctly representatives of the Germanic stock. Yet these two sections, while divided in respect to language, race, and politics,† are quite similar in their present economic condition. The Walloons used to be distinctly a people of peasant proprietors, but today the pro-

* The so-called Keltic question, ending in agreement upon this result, is best discussed in *L'Anthropologie*, June, 1892; *Jour. Anth. Institute of Great Britain*, VI. p. 150; Transactions *British Association for the Advancement of Science*, 1880, p. 612; *Corr.-blatt der Deut. Ges. für Anth.*, XIII, 1882, p. 171. Following this, we differ from Dr. Beddoe (*Jour. Anth. Inst.*, II, p. 10 *et seq.*), agreeing with the best continental authorities (*Mem. Soc. d'Anth., ser.* 1, III, p. 95), that the Walloons are pure representatives of the "anthropological" as distinguished from the "linguistic" Kelts.

† *Rev. d'Anth.*, 3rd Ser., I, p. 175.

portion of ownership does not seem to follow the race lines.* The problem is relatively simpler than it is in France, because the two areas described are practically on the same plane of prosperity. This is also due in part to the fact that industrialism prospers at the present day in the region where



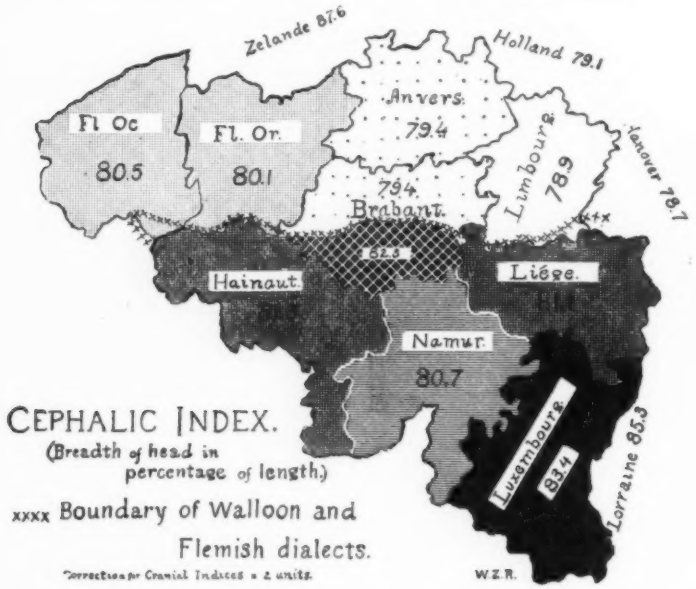
coal, iron and other minerals are found, while in the Flemish district the people still rest upon the primitive basis of agriculture to a considerable extent. We may assume, therefore, that the element of prosperity entering into the determination of sex is here eliminated; or at all events that the economic conditions are not widely different.† If this be so, the proportion of the sexes born ought, on our hypothesis, to be determined largely by the factor of ethnic intermixture; that is, the proportion of males to females born ought to decrease along the lines of contact between the two ethnic

* *Journal Royal Statistical Society*, London, 1887, p. 124, especially the table on p. 142. The average size of parcels of land does not follow this geographical distribution. *Ann. Stat. de la Belgique*, XXII, 1891, p. 48. It appears rather to depend upon geological conditions. *Ibid*, pp. 254–55.

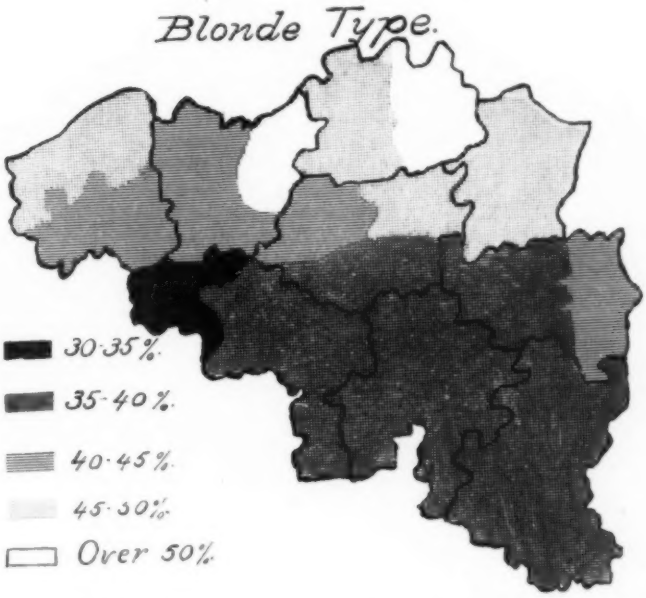
† The Walloons are asserted to be even in a more prosperous condition than the Flemings. For tables of average wages in each district, *vide Journal Royal Statistical Society*, London, June, 1891, pp. 376–78. The same is shown in *Ann. Stat. de la Belgique*, XXII, 1891, p. 247. Compare also p. 30, note, *infra*.

stocks already mentioned. This line is more clearly marked in Belgium than anywhere else in Europe, following closely a geographical line which passes a few miles south of Brussels, extending in an east and west direction from Maestricht on the northeastern frontier to the frontier of France, north of Lille.

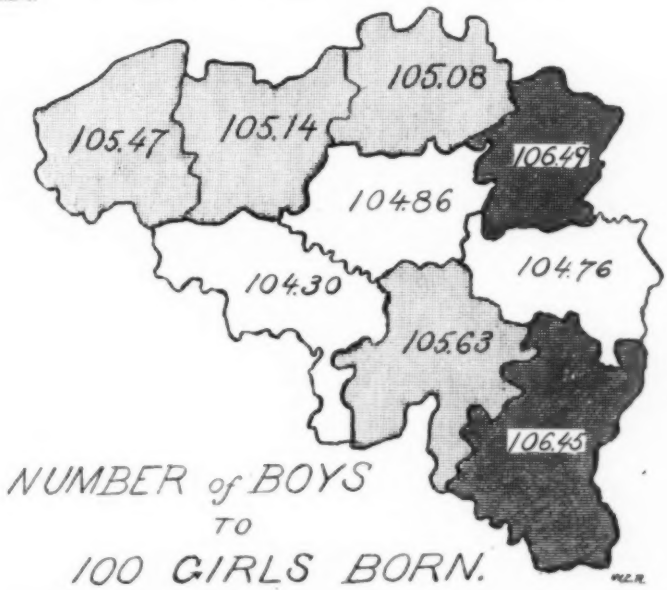
Comparing now the three maps appended, two of which show the location of the two ethnic stocks and their line of contact,* the other showing the proportion of males to females born, it will be noted that in every case the departments lying along the line of contact above mentioned are characterized by a relative decrease in the number of males to females born; and on the other hand, in those departments where either of the stocks is quite unmixed, the proportion of males to females born rises appreciably. In



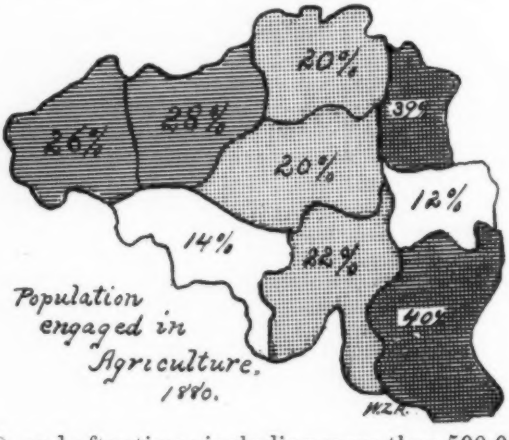
* This map is based upon the two anthropological classics, *Ethnogenie de la Belgique: Les Indices Cephaliques des Flamands et des Wallons*, par Dr. Em. Houzé, Brussels, 1882; and *Enquête Anthropologique sur la couleur des Yeux et des Cheveux*, par Leon Vanderkindere, Brussels, 1879.



CAUTION.— It should be noted that these anthropological maps merely indicate the distribution of one ont of many traits, showing nothing of all the rest. Representing merely averages for large areas, they do not in themselves always indicate the true lines of ethnic contact.



Luxembourg, for instance, where the Walloon stock is purest, there the proportion of males to 100 females born is 106.45. And also in Limbourg, which is characterized by a population with the longest and narrowest heads in Belgium, — that is, peopled by the Germanic stock in its greatest purity, — here also the proportion of males to 100 females born rises to 106.49.* On the contrary, in Hainault and Brabant, the proportion of males to 100 females born falls as low as 104.3. The statistical basis for these comparisons is, moreover, extremely broad, covering a period of forty years



(1840–80), and oftentimes including more than 500,000 births in a single department.† This evidence certainly tends to give color to the view that, where the element of prosperity is eliminated, a certain influence is exerted in the direction we have indicated. To follow this out for every country of Europe would, of course, be necessary before the hypothesis

* The proportion of population engaged in agriculture was in 1891 practically the same in each, viz., 40 per cent. Liége and Hainault have from 12 to 14 per cent engaged in agriculture; in Brabant it was 20 per cent. *Ann. Stat. de Belg.*, XXII, p. 246.

The correspondence, therefore, between the proportion of the population in industry and the tendency to an increased proportion of females born is exact. Is it because material prosperity is greater in industry? Or is there a higher percentage of urban population and consequent intermixture? The proportion of urban population in Flanders is, however, high, and its proportion of females born merely average. This apparently points to industry as a field of intermixture. *Ibid*, p. 54 *et seq.*

† *Ann. Stat. de la Belgique*, XXII, 1892, p. 85.

were entitled to credence; but it derives a measure of probability from its complete correspondence with the facts instanced by Westermarck, Düsing and the other authors mentioned. Our conclusion would, then, be that the total birth rate of a country is not directly affected by ethnic intermixture, as M. Lapouge has asserted: but that the crucial test of intermixture is to be found, if anywhere, in the relative proportions of the sexes born.

Some contradictory evidence even in this last respect remains to be accounted for, as in Greece* and Algeria,† where in decidedly mixed populations the proportion of male births is yet abnormally high. But a strong probability still remains that some fixed relation in this respect may be found to exist, since it corresponds so closely with facts observed among animals and among primitive men.

M. Lapouge's final proposition may also be freely disputed in part, namely, that the long-headed and blonde type of the French population is characterized by a migratory instinct, and that even for France the final result means the extinction of those of Germanic type. It is still an open question as to the head form of the most highly developed type of man, especially that which characterizes the population of cities. But the opponents of this view, that the long, narrow-headed type is better fitted for the stress of city life, include among others so well-known names as Virchow and Bogdanov.‡

It appears that, on the whole, the evidence for Europe tends to show a segregation, or perhaps a production, of the long, narrow-headed type in the populations of cities. Dr. Ammon has shown it to be distinctly marked in Baden.§

* *Statistisches Archiv*, 1893, p. 685, gives a table of the proportion of sexes born for Europe. Greece is 118.01 to 100.

† Levasseur, *La Population Française*, III, p. 432.

‡ Houzé, *op. cit.*, p. 51, gives a table showing that in Belgium the educated and professional classes are distinctly broader-headed than the common people — the exact converse of M. Lapouge's assertion. *Vide* also Ranke, Beiträge zur Phys. Anth. der Bayern, Absch. I, p. 234. Dr. Beddoe's measurements of the Scotch fully corroberate Houzé. *Anthrop. History of Europe*, p. 104.

§ *Naturliche Auslese beim Menschen*, p. 72 *et seq.*: and *L'Anthropologie*, III, p. 317; and *ibid*, III, p. 722.

Calori noted it long before in Italy,* and Durand de Gros observed it in France.† Recent statistical investigations, as for instance in Limoges, bring it out in great clearness.‡ In Dr. Oloriz's studies of the Spanish cephalic index§ it appears that the heads of the urban populations in Madrid, Barcelona, Pamplona, Seville, and Cadiz are narrower than those of the surrounding populations. In Malaga and Granada an opposite tendency is indicated; but the statistical bases are really too narrow to be conclusive in every case except in Madrid, where 697 individuals were measured in the city alone. In Vienna the cephalic index is lower than anywhere else in Austria; that is, the heads are narrower and longer than elsewhere.‖ It is, however, probable that this is due to a social selection between races, rather than to the direct influence of pressure of civilization upon the conformation of the brain. For there is evidence to show that among the educated or professional classes a distinct tendency toward broad-headedness is manifested.¶

While agreeing that much evidence confirms M. Lapouge's assertion that the population of cities tends toward dolichocephaly, his statement with respect to the complexion and hair of urban types may be confidently denied. His contention is that the Germanic, narrow-headed blonde type in France is being eliminated by absorption and extermination in the towns. But it is just here in respect of complexion that a positive denial of his general rule may be made. Dr. Ammon for Baden has brilliantly shown the same result

* *Archivio per l'Antropologia*, XVI, p. 274.

† *Bull. Soc. d'An.*, 1868, p. 228.

‡ *Mem. Soc. d'An.*, Paris, 3d ser. I, fasc. 3, p. 19. Compare the appended map, which shows it clearly.

§ *Distribucion Geografica del Indice Cefalico en Espana*, Madrid, 1894. *Vide* tables, pp. 279 *et seq.*, but especially the table, p. 47.

‖ *Mitt. der Anthrop. Ges. in Wien*, XXV, 1895, II and III Heft, p. 77, contains a map.

¶ Other details upon this point will be found in an article by the writer in the *Political Science Quarterly*, X, 1895, p. 648. Dr. Beddoe arrives at the same conclusion in general. Welcker and Schaafhausen assert that maturity likewise brings a tendency toward brachycephy (*Archiv. f. Anth.*, I, p. 151). Drs. West and Porter affirm the opposite to be true, and Dr. Boaz agrees with them (*Verh. Berl. Ges. f. Anth.*, Sitzung May 18, 1895, p. 392 *et. seq.*). So the evidence seems here to be divided.

which our author obtains, but these are the only two who have arrived at such conclusions.* In fact, the exact reverse of his proposition seems more often to hold true, *viz.*, that the city populations tend toward a predominance of the brunette type. Mayr has shown that the populations of Bavarian towns are distinctly darker than those of the suburban districts.† The great census of the distribution of the complexion types in Germany, taken under the direction of Professor Virchow, brought out in startling clearness this same tendency of city populations toward the brunette variety.‡ In Austria Dr. Schimmer finds "volle Bestätigung" for the same.§ Add to this the testimony of Dr. Beddoe, the prime authority upon this particular subject, that in Great Britain also the populations of towns are darker as a rule.‖ In Switzerland Dr. Stuber also corroborates it,¶ although Dr. Kollmann finds examples of an opposite character.** This may account in part for a result of Dr. B. A. Gould's studies of the complexion of soldiers, *viz.*, that in the Eastern States there was a marked preponderance of brunette type over the West††. Whether all this is due to race predispositions or to a social selective process, such as that "pigment is an index of force," may perhaps be reserved for future discussion.‡‡

At all events, the young child and the aged are alike deficient in respect of pigmentation. Dr. Beddoe has shown

* *Op. cit.*, p. 92 *et seq.*

† *Zeits. des K. Bayer, Statist. Bureaus*, VII, 1875, Heft 4, pp. 229 and 305, with tables.

‡ *Archiv. f. Anth.*, XVI, p. 320; and *Sitzungs ber. der K. Acad. der Wissenschaft*, Berlin, for 1885, p. 39 *et seq.*

§ *Mitt. der Anth. Ges. in Wien*, Supp. I, p. XIII.

‖ *The Anthropological History of Europe*, p. 114, and tables in *Races of Britain*, p. 160 *et seq.*

¶ *Mitt. der Naturforschenden Gesellschaft* in Berne, 1880, No. 979, p. 50. Innsbruck shows it clearly in the Austrian Tyrol. *Archiv. f. Anth.*, XVI, p. 379. *Vide*, fine comparative table for its four cities in *Mitt. der Ges. f. Anth. in Wien*, XXIV, 1894, p. VI.

** *Denksch. der Schweiz, Ges. f. die Gesammten Naturwissenschaften*, XXVIII, 1 Abth. p. 17.

†† *Investigations in the Military and Anthropological Statistics of American Soldiers.* Cambridge, 1869, p. 206.

‡‡ *Rev. d'Anth.*, 3d ser., II, p. 265. In many cases the blondes do not decrease in direct proportion to the increase of brunettes, indicating that a direct influx is not the sole influence, *Archiv. f. Anth.*, XVI, 1886, p. 320.

how disease often produces a change toward the blonde type. He asserts that dark-complexioned children are much more tenacious of life; and Baxter has shown that greater vitality was found among the darker types of our own soldiers during the Civil War.* Certain it is that in acclimatization the dark type possesses a great advantage. In the tropical regions, and even in campaigns to the North, their power of endurance has often been greater.† Havelock Ellis declares that the insane are more apt to be found among this class,—the very class whose nervous tension is the greatest, and who would presumably be found more commonly among the populations of cities.‡ Thus there is much to show that social selection is exactly the converse of that mentioned by M. Lapouge, and that it is the dark-complexioned Keltic type which is in reality flooding the cities of Europe, raising their proportion of brunettes above the average of the surrounding suburban districts. The broad-headed Bretons, for instance, show a disposition to migrate four times as great as the blonde, long-headed Normans.§ Other evidence of a similar kind might be given.

After so much adverse criticism, it may well be asked, what is the real significance of this paper by our author? And the answer is that he has brought together for comparison data from several distinct fields of investigation, all of which point to the corroboration of a single law of social selection, although the attempt to establish a causal relation between many of these facts seems to have failed. That a certain parallelism between the geographical distribution of the cephalic index (index of breadth of head) and the birth rate in France exists cannot be denied; and to have pointed this out is a great service. The error seems to lie only in the explanation for this relation which is offered,

* *Medical Statistics of the Provost-Marshal General's Bureau*, 1875, I, pp. 61 and 72; diagrams Class I, Chart XXIII. *Cf.* Dr. Beddoe's remarks in *Races of Britain*, p. 148.

† *Popular Science Monthly*, April, 1895; article, "Acclimatization," by the writer.

‡ *Man and Woman.* (Cont. Science Series.) *Report of Anthrop. Com. of Brit. Asso.*, 1883, p. 21, shows the opposite.

§ *Jour. de la Soc. de Stat. de Paris*, XXI, p. 290. It is matter of common observation that Auvergnats and Savoyards are flocking to Paris in great numbers.

namely, that it is the crossing of races which is the cause of the low birth rate. Rather does it appear that both the geographical distribution of the cephalic index, measuring the movement of races, and the variations of the birth rate, show certain correspondences, because they are both alike the results of the action of a new force, *viz.*, the competition for economic supremacy between two ethnic stocks.

In other words, the birth rate is in general lower in those areas where there is the greatest advance in material prosperity,— a well-known paradox;* and it is in precisely those same parts of the country where the possibility of prosperity has tempted the Germanic type to invade the territory of the primitive Kelts. Thus they have flowed over the fertile plains and along the river valleys, leaving isolated spots of Kelticism here and there, as in Savoy, Auvergne, Brittany, and the Morvan; and these infertile and economically unattractive areas were longest the strongholds of an unabated birth rate, because there the family and its traditions were least modified by the prospect or possibility of a rise in the scale of life. This may be shown in detail by a comparison of Brittany and Normandy, respectively the strongholds of the Keltic and of the Germanic stock. Thus, the fecundity of the Breton is 60 per cent greater than that of the Normans, but this is mainly because the people are less touched by modern competitive social forces. The strength of family sentiment is indicated also by a much higher percentage of native (born in the department) population in Brittany than in Normandy, and also by the fact that illegitimacy is among the Kelts only one-third as frequent as in Normandy.†

It seems, therefore, that M. Lapouge has committed the same error into which Morselli fell in connecting the rate of suicide with the influence of the Germanic stock. They have both ascribed a social phenomenon to the influence of race, where they should have regarded the phenomenon of the distribution of race as merely corroborative and parallel

* *Vide Bull. Soc. d'Anthrop.*, 1891, p. 74.

† *Journal de la Societe de Statistique de Paris*, XXI, pp. 288 *et seq.*

evidence of the action of a social selective process, which lies deeper than either. In comparing the map of suicide and the cephalic index, the prevalence of suicide in those areas where the long-headed Germanic stock is most in evidence became apparent; and this correspondence led Morselli to assert that the one was the cause of the other,* just as M. Lapouge asserts that a low natality is due to the intermixture of blood. But if we are right in our contention, the parallelism merely indicates that the economic possibilities of a given area which first attracted an invading stock, afterward induced a struggle for supremacy with the former inhabitants, and that the acuteness of this struggle is marked by the social detritus in the form of a high rate of suicide. Wherever the German is found there also is a high rate of suicide; but the converse of this is not true, which shows that it is not race but social forces which produce the result. In the Rhone valley, long-headedness indicating intermixture occurs from Lyons toward the south; and this area of crossing is characterized by a higher rate of suicide than either to the west or the east, in Savoy or Auvergne (Keltic). But the lowering of the cephalic index — that is to say, the decrease of broad-headedness — is here due not to intermixture with the long-headed Germans, but with a long-headed Mediterranean stock, so that a high rate of suicide follows the geographical distribution of narrow-headedness in just the same way that it would if the narrow-headedness were Germanic instead of Iberian. In Italy, in a general way, suicide increases in frequency toward the north, culminating about Modena; but here also it is not due to the greater strength of the long-headed Germanic type, for it is precisely in the north of Italy that the heads are broadest,— that the Keltic type is most common.† But the maximum, it will be noted, occurs just where the crossing of two stocks is most

* *Suicide*, p. 86 *et seq.*

† The remarkable anthropological studies of the Italian populations by Dr. Livi were not made at the time of Morselli's work. But they prove above all things the complete disappearance of the Germanic type in North Italy, especially in the valley of the Po, just where suicide appears to be most common.

marked, neither of which is Germanic. Here the long-headed blonde German is replaced by the long-headed brunette type which culminates in purity in Corsica, which has spread into France and flowed up the valley of the Rhone in the way we have indicated. In short, these two examples show that it is not any particular race which marks the tendency to suicide, but those social forces which have induced the contact and conflict of races.

To trace out such lines of contact, and to offer the results to the statistician, is one of the services which may bring anthropology into a direct line of usefulness with the modern methods of sociological study. A great mass of exact material has been accumulated. And when sociologists awaken to the fact, not even yet plain to many within the circle, that anthropology does not mean primarily the study of primitive or extinct peoples and of barbarous customs, but of civilized nations as well, a broad field of investigation will be opened to view. Nor is the necessity of a speedy collection of anthropological data any the less imperative among the populations of civilized countries than among the rapidly disappearing aborigines. For modern conditions, the railway and the telegraph are rapidly invading the original ethnic areas of characterization. In Europe already a new conception of the meaning of Anthropology has risen. When this shall become true here in the United States the science will become really tributory to sociology as a field for original research. And then anthropology, like charity, will be found best to begin at home.

Since the preceding essay has been set in type the February number of the *Revue* has appeared, which contains the conclusion of M. Lapouge's paper; and also a partial reproduction of it in the *Quarterly Journal of Economics* for January. The anthropological data herein is of a more satisfactory character than that already given in our tables; and it evinces some very careful work. Pressure of time prevents a full account of it; neither is this necessary, since no new results or conclusions are brought out. And we may still reject

much of the statistical matter, in accordance with Broca's rule, that no series of less than twenty individuals should ever be considered as indicating a type. It is exceedingly difficult to understand, moreover, why M. Lapouge should so persistently confuse the dolichocephaly of the short brunette Meridionaux with that of the blonde and tall Germanic type. This constitutes the most fundamental anthropological defect in the work, which is so exact in every other detail. It will bear careful examination, however, as a report of progress in a new line of work, in which M. Lapouge is a pioneer.

A further note must also be added on the basis of Dr. Ridolfo Livi's "Anthropometria Militare," just published (Rome, March, 1896), which, with its superb maps and its detailed scientific tables, forms a most valuable contribution to our knowledge of the anthropology of Europe. To give an outline of its wealth of material will require a special article: our purpose here is simply to call attention to the chapter on the subject of ethnic selection. For this affords the true explanation, in our view, of the difference of cephalic index between the city and the rural districts, which Drs. Ammon and Lapouge first pointed out.

Primarily, it places beyond question the fact of the persistence of a cephalic index in the cities different from that of the country. But an additional fact is brought out, which gives an explanation for this phenomenon, which we have sought in vain in the data of earlier observers. Of the 69 capitals of provinces in Italy, the urban cephalic index is lower than that of the provincial average, in 41; in the other 28 it is higher than this average.* But if these results be studied in detail, it appears that the urban cephalic index is below the provincial one wherever that provincial average is exceedingly high. But in the south, where dolichocephaly (low index) prevails, there the cities show a figure above the average. Thus, for example, of 22 provinces of the north, with an average index above 84.7, the city is below the country in 19 cases and above it in only 3; while of 18 provinces in the south, with a low cephalic index below 80.7, the index for the cities is higher than in the provinces in 14.†

To this is then added a comparison of the indices of the student class with the peasantry, on a broad statistical basis, which shows that here also, in the regions of prevalent broad-headedness, the stu-

* *Op. cit.*, p. 87. † *Op. cit.*, p. 89.

dents are more dolichocephalic than rustics; and in the south, on the other hand, the intellectual classes show a less exaggerated type of narrow-headedness than the rural populations.*

All this flows from the common and simple principle that the urban and professional classes are the result of more ethnic intermixture than is the rural population; and hence they more nearly approach the average for the kingdom. It is conceivable even that in time, with a complete assimilation of all the ethnic elements, a single homogeneous type for the whole nation would result. The affirmation of prevalent dolichocephaly in cities, heretofore, has been due to the fact that those regions which have been most carefully studied have happened to be brachycephalic on the average; in which case the cities would tend to have their indices lowered by intermixture with immigrants from more dolichocephalic regions. If a town stood on a mountain peak, would it be surprising to find that all immigrants came from a lower elevation? Or that to the city at the sea level all immigrants came from higher altitudes. As it happens, Ammon Lapouge and Dr. Closson, of this country, have all found the confirmation of their law of dolichocephaly in cities by studying Baden, South Middle France, and Brittany, where the elevation of the cephalic index is above the average. Hence the probability that all immigrants should bear marks of a lower level of head index. Yet precisely in those areas where the average for the locality touches or drops below the general average of the country, as in Bouches-du-Rhone and Pyrennees Orientales, there the law fails of confirmation,† as it does in Southern Italy and Spain.

It should be noted that, after detailed statistical comparison, Dr. Livi finds that the evidence from other countries, pointing to the prevailing dark complexion of the city type, is amply confirmed by his results.‡

That this simple cause will explain all of the phenomena instanced above for all of Europe is not yet certain. That the sharpness of

* This may explain the diversity of opinion expressed in Note 6 on p. 32 *ante*. Houzé's results for Belgium confirm this also, *Op. cit.*, p. 51; and Dr. Beddoe, in "Anthropological History of Europe," p. 104. *Cf.* Note 3, p. 31 *ante*.

† Dr. Closson, in the *Quarterly Journal of Economics* for January, 1896 (especially p. 178), presents the case of Lapouge most ably, and yet he wisely hesitates to assert the law to be proven. I should take exception to much of his argument were there time, but defer it until a later apportunity. Suffice it to say that the connection of the dolichocephaly of cities with the blonde Germanic type, as we have attempted to prove, is utterly unfounded.

‡ *Op. cit.*, p. 70.

rural and urban contrasts, in respect of cephalic index, tends to disappear in those countries whose average lies intermediate between that of the Celt and the dolicho cephalic stocks, appears to be true. And yet even here, as in Madrid, Marseilles, and elsewhere, this index is still lower than in the low surrounding provinces, and further statistical study will be required to explain these cases.* For the great bulk of the cases cited by us, however, the prevalent crossing of types in cities offers a competent explanation. That this may in turn react upon the percentage of the sexes born has been already suggested.† If it were true, the proportion of female births would be above the average in industrial centres, in cities, or in regions where the proportion of urban population was especially high. But it is too early to elaborate this thesis further. If the significance of anthropology for the sociologist has been pointed out, the purpose of this paper will for the present have been attained.

* Dr. Lapouge attempts to explain this, but his data are too scanty as yet.

† *Vide* note on p. 30.

REVIEWS AND NOTICES.

MAYO-SMITH'S SOCIOLOGY AND STATISTICS.

Sociology and Statistics. By Richmond Mayo-Smith, Ph.D. New York, 1895. Pp. xvi, 399.

This volume is the first part of a systematic treatise on the science of statistics, covering the subject of population, while a second is in preparation, to deal with economic life. It is hardly necessary to say that it is the most important work in the English language of its character which has thus far appeared.

The scope of the work is well defined. Population is considered under four general aspects: (1) Demographic, that is, the phenomena of its movement by birth, marriage, and death, and its analytic elements as distinguished by age, sex, and conjugal condition; (2) Social, or society, as witnessed and evidencing itself in the family, education, religion, and occupation; also as exhibited in physical, moral, and economic defects, considered together by the author under the heading "Infirm and Dependent." This section also includes a discussion of the phenomena of suicide and crime; (3) Ethnographic, or population distinguished as to race and nationality, and as migratory; (4) Environment, including both physical and social forces which affect and determine population into certain directions of development. The scheme is a comprehensive one and serviceable, though no two writers would probably agree on the same arrangement. I should prefer to separate the classes in Chapter V, referred to as the "Infirm and Dependent," embracing the blind, deaf, insane, idiotic, and paupers. Though in our practical administration there is abundant authority for this general inclusion of the infirm and dependent together in public relief, there is already a revolt from this, and an attempt at a separation in the administration of these groups, in the interests of a more humane and scientific spirit. From the standpoint of social science or practical sociology it might be well to treat the blind, deaf, insane, and idiotic in connection with Chapter VIII, "Sickness and Mortality," and then to consider pauperism either in Chapter IX, in connection with occupations, or to defer it to the second volume, devoted to economic statistics.

It is extremely difficult for any writer on statistics to give the various topics which justify treatment the proper place respectively due them. Statistics of religion in the present work are given two pages; education, three pages; while suicide receives a whole chapter of twenty pages, and crime thirty pages. For this the author is not responsible. The material available for the study of religion and education in the light of statistics is not large. The regularity of suicide has for many years excited the curiosity of moral philosophers, and there is considerable literature devoted to it. Possibly the subject of religious statistics might have been further well illustrated by more detailed references to the distribution of Protestants and Catholics in Ireland and the German States, with a view of furnishing suggestive illustrations for the student of politics. Fairly reliable estimates of the growth of certain religious denominations in this country could be secured, if not from the census returns, at least from the year-books of various churches. The difficulties which Professor Mayo-Smith has met here, however, should direct students of statistics to new endeavors to estimate by statistics the strivings of the community toward a higher moral life. Sociologically it is, of course, just as important as the attempt to estimate the failures of society as measured by the increase of crime.

As for the method of presenting the statistics, the author expressly states that "no figures have been introduced unless they seemed to bear on the questions on hand, while enough have been given to present each topic objectively." "It has not been thought necessary to refer every statistical figure to volume and page or financial publication, which would multiply references to such an extent as would have been wearisome and confusing. The chief official authorities are referred to when a new subject is introduced, and subsequently can easily be verified from the same documents." We can hardly forgive Professor Mayo-Smith for not giving more biographical references. This work will be largely used by students of special attainments, and these special students will naturally wish complete scientific opportunity to further investigation. As the author has the material in hand, as no other writer in English has, it is a source of personal regret, at least, that he did not share his bibliographical accumulations and the spoils of long and patient study. The authors quoted and the material used cover a fairly wide range, most suggestive to the scientific investigator. The interest, perhaps, would have been

heightened by a more complete reference to American experience, particularly as this work is not an exposition, designed simply to illustrate the art and method of statistics. It might be helpful to the physician interested in mortality rates to have some comparisons of the mortality in American cities compared with those of Europe, and in general it is my impression that the registration reports of the cities of Massachusetts, Providence, R. I., and some of the larger Atlantic cities, might be used with a fair degree of reliability in indicating at least the fluctuations of the death rate from year to year. Students of sociology need to be prompted at every point with queries as to reasons for differences between rates and averages calculated for this country and for Europe. Again, in dealing with the mortalities of armies in war, the author might refer to a considerable body of material furnished by statistical reports of sickness and mortality in the army of the United States, furnished by the Surgeon-General's office, by Baxter and Gould, and in Fox's *Regimental Losses in the Civil War.* In the influence of geographical position upon crime a reference might have been made to the study of Mr. Waldo Cooke upon the *Distribution of Murders in Massachusetts;* and under statistics of prisoners to the studies of Professor Falkner; and in regard to the increase of crime to the analysis made of criminal statistics in Massachusetts by Col. Wright, when he was Chief of the Bureau of Labor Statistics in that State, and by Mr. Pettigrove, the present Secretary of the Prison Commissioners of Massachusetts. We should have been glad if more attention were given to the subject of the rate of increase of population in the United States, and to the vexed and most important sociological question of the relative increase of the colored and white elements. This, however, is an exceedingly difficult problem, and possibly the author considers impracticable, for he remarks that "the enumeration of the number of men belonging to the white, red, yellow, and black races is entirely misleading."

The great value of this work, to my mind, is in those sections devoted to what the author terms "scientific tests." A careful training through these pages would do a great deal toward raising the standard of reasoning and argument supported by statistical illustration. The author has been most happy in this arrangement, and has done much to make the subject of greater pedagogical applicability. The sociological conclusions which the author draws are careful, and

tempered by a scientific caution. In so wide a range of subjects as covered by this volume, it is only natural that there would be opportunity for differences of opinion, but in no place is the reader likely to go far astray because of dogmatism. I have had occasion to prove a good many of the figures quoted, and have found them generally reliable. It is, perhaps, a misfortune that dates are not given more frequently, as occasionally there is some trouble in determining, if one wishes to do minute work, the exact year of the statistical returns. When we realize the difficulty of securing an accurate transference of figures from the manuscript into type, the care displayed by Professor Mayo-Smith is all the more commendable.

DAVIS R. DEWEY.

GRADUATES OF COLLEGES FOR WOMEN.

Compensation in Certain Occupations of Graduates of Colleges for Women. (From the *Twenty-Fifth Annual Report of the Massachusetts Bureau of Statistics of Labor.* Pp. 1–48.) By Horace G. Wadlin, Chief of the Bureau of Statistics of Labor. Boston, 1895.

This Report is based on an investigation conducted by the Association of Collegiate Alumnæ, and is a little wider in scope than its title indicates, as it includes some women who have received a special, though not a college, training. The first part of the Report contains tabular presentations of the returns made by female employes, and by employers of labor, while the second gives at length the opinions of these two classes on the causes and remedies for inequalities in the payment of women and men.

Returns were received from 451 employes, though, unfortunately, but few of the questions were answered by all of those making returns. Answers were received from nearly all parts of the Union, so the conditions indicated are by no means local. Of 437 women making returns 389 were single, 28 married, and 20 widowed. Replies were received from representatives of 67 different occupations. Among these, as might be expected, teachers are most numerous, 169, or 38.6 per cent, of those answering giving this as their occupation. Next come library workers, numbering 47, stenographers with 28, nurses and superintendents of nursing with 22, and journalists, editors, and reporters with 19. Out of 412 answering 338 had some gainful

occupation beside their main pursuit, and 350, in a total of 393, are supported entirely by their wages. The largest proportion of those not supported entirely by their wages is found among the stenographers (24 per cent, or 6 in a total of 25); the next largest is among library workers (21.73 per cent, or 10 out of 46); and the third among journalistic workers (3 out of 15).

Table V shows the monthly salaries by occupations. More than one-third of those answering (35.7 per cent, or 144 in a total of 403) fall within the class receiving $50 but under $75 per month; 21.8 per cent (88) receive $25 but under $50, and precisely the same number receive $75 but under $100. Only 19.1 per cent (77) receive over $100 per month. As only the monthly earnings are given, with no data as to steadiness of employment, it is not possible to compare the earnings of the different occupations.

Table VI shows the comparative pay of men and women for the same work. Of 250 women making returns, 150 state that for work of the same grade as their own men receive higher wages, 95 that they receive the same, and 5 that they receive less. The report of the teachers on this matter is of special interest, both from the nature of their work and from the fact that a sufficient number are concerned to give their answers a somewhat representative character. Of 102 replying, 69 report men as receiving higher wages for the same grade of work, 31 as receiving the same, 2 as receiving less.

The Report next takes up two of the causes often assigned for the inferior pay of women, *i. e.*, the fact that they have only themselves to support, and that they seldom follow one pursuit steadily enough to make themselves really valuable as employes. Answers concerning the first of these were received from 379, of whom 157, or 41.42 per cent, contribute to the support of others, while 222 do not. With reference to the vexed question of teachers' salaries, it is interesting to notice that 52, or 37.31 per cent, of the teachers replying aid in supporting others. The answers to inquiries concerning the second alleged cause show that it is even more fallacious, if this group of women can be regarded as typical. Of 333 respondents, 214, or 64.26 per cent, have followed but one pursuit, and have been engaged in that for the average period of 7 years 8 months; 88 (26.42 per cent) have followed two pursuits, spending an average period of 5 years 4 months in each; and 19 (5.7 per cent) have three occupations, spending an average period of 4 years 8 months in each. Atten-

tion is called to the fact that this same tendency toward steady continuance in one occupation was brought out in an investigation conducted by the Bureau in 1884 among the working women of Boston.

The final question asked of the employes was, "When women receive less than men for work of the same grade, is their work, in your opinion, less valuable to the employer?" This calls only for an expression of opinion, but the answers are of interest as showing the views held by women themselves as to the comparative value of their work. Of 332 answering the question, 212 consider their work equally valuable with that of men, 41 consider it more valuable, while 31 deem it less valuable; 48 give qualified and indefinite answers.

The number of returns received from employers was 104. The establishments represented by these men employed 4697 males and 3097 females, and covered a wide range of occupations. To the inquiry, "Are the services of men and women equally valuable to you?" 90 replies were received; 46 replied "Yes," 29 "No," 7 gave indefinite replies, and 8 answered "On some work, yes; on other work, no." Of the 29 employers who considered the services of women of inferior value, 15 ascribe the inferiority to physical or mental differences due to sex, 4 to insufficient training, 3 gave both reasons, and 3 do not answer. Only one gives the answer that it is because women consider their work temporary.

Employers were also asked the reasons for the smaller pay received by women when doing work of the same grade with men. Of 67 who answered, 29 ascribe the difference to the effect of supply and demand or competition; 21 give physical or mental differences, or differences in general ability; while 17 assign custom as the sole cause.

The answers, then, received from a representative group of trained female workers show that a large majority depend entirely on their wages for support. Sixty per cent of those answering the question (150 in a total of 250) receive smaller wages than a man would in the same position. Not far from half the women answering the next question (157 out of 379) contribute to the support of others, and two-thirds have been engaged during their whole industrial life in only one pursuit, to which they have given an average period of 7 years 8 months. Half the employers answering the questions deemed women's services of equal value to them with men's, and the three reasons assigned by employers for women's lower wages are competition, physical and mental differences due to sex and custom.

The second part of the Report, giving the opinions of employers and employes in full, is perhaps as interesting for what it does not contain as for what it does. There is very little discussion as to the desirability of business employment for women; their presence in the industrial world is accepted as an accomplished fact. Together with the stock reasons for the lower pay of women, several causes less frequently assigned are given. Thus, several of the employes think that in many cases it is due to the fact that a woman is more timid about asking for an increase, and will accept a reduction with less protest than a man would. Another suggests that "men, as a rule, want women to work for them, not with them, hence, at present, few women do anything except the 'dead work.'" One very pertinent consideration comes from an employer: "Heredity has much to do with the wage question. Men for many generations have been trade workers. They are thereby fitted for trade employment by heredity. Women are newer comers than men." It is recognized by both classes that in some employments women are physically unfitted for earning the same wages as men, but for the inequalities in payment in other occupations various remedies are suggested,— union among the workers, greater confidence among women in their own value as workers, the possession of the ballot, but above all special training for the work they intend to adapt.

On the whole, the outlook for the future of trained female workers as indicated by this Report is decidedly encouraging. At present their wages, as a class, are inferior to those of men, but both employers and employes seem willing and able to discuss this difference dispassionately and justly. Most of the causes assigned for their lower wages seem temporary in character, and will doubtless disappear as women more generally receive the advantages of a college or other special training, and become more accustomed to the demands of a business life.

M. K. Conyngton.

YEAR BOOKS AND ANNUALS.

The World Almanac and Encyclopædia. 1896. New York. Pp. 584.

Whitaker's Almanac for 1896. London. Pp. 440.

The Financial Reform Almanac for 1896. London. Pp. 312.

In each of these volumes the essential features are substantially those of the previous year, the changes, though numerous, having

been in the main confined to minor details on the enlargement of existing departments. In *Whitaker's*, which is a manual, or directory, rather than a work of statistics, the alterations are mainly connected with the governmental changes brought about by the recent elections. Some additions have been made in the pages devoted to the Church of England.

The leading article of the *Financial Reform Almanac*, upon the question of Free Trade, is also related to the advent of a new government. The leading statistical departments, as usual, are those devoted to finance, trade, politics, and population. Some enlargement has been made in the section devoted to Education, relating chiefly to the question of increased grants for denominational schools. A new department has been established for colonial affairs, and is devoted this year to statistics for the Australasian colonies.

The subjects treated in the *World Almanac* are so numerous and heterogeneous that it is difficult to pass an intelligible brief comment upon the volume as a whole. The scope of this almanac is far wider than that of the others. Considerable space is given to railway and trade statistics. The present volume contains a copy of the United States Constitution with its amendments, but in general the work has been carried out upon the lines of the previous year, with but few changes, even in matters of detail, and little more has been done than to bring it up to date.

Statistisches Jahrbuch der Schweiz. Fifth Year. 1895. Berne. 1896.

The new tables in this issue include a table of areas with the elevation of the communes; the distribution of the population by cantons or country of origin; suicides, and the influence of *l'influenza* as the immediate or indirect cause of death. The statistics of suicides may be summarized as follows: —

	Yearly Average per 100,000 of Inhabitants.
1876–80,	22.8
1881–85,	23.5
1886–90,	22.1
1891,	22.1
1892,	20.6
1893,	23.9

There is a marked difference between the cantons,— Neuchatel running as high as 40, while Lucerne has never had more than 13 per

100,000. Suicides have occurred, according to the civil conditions, as follows, per 100,000 of population of same conditions: —

	Males.	Females.	Total.
Celibates	47.8	9.6	29.4
Married	51.6	9.0	30.2
Widowers and widows	128.2	15.5	49.6
Divorced	312.0	27.6	125.8

Tables showing motives, age, sex, and time of year are also given. The following table shows the distribution of suicides occurring on the days of the week in percentages: —

	15 Principal Cities, 1891-94.	43 Arrondissements, 1893-94.	Total.	Guerry's Observations in France.
Monday	14.7	22.2	15.9	15.2
Tuesday	16.9	18.4	17.2	15.7
Wednesday	13.8	13.0	13.7	14.9
Thursday	15.4	10.7	14.5	15.7
Friday	13.8	12.2	13.5	13.7
Saturday	13.3	11.4	12.9	11.2
Sunday	12.1	13.0	12.3	13.6
	100.0	100.0	100.0	100.0

Statistique de L'industrie Minérale et des Appareils a Vapeur en France et en Algérie, 1894. Paris, 1895. Pp. xxiv, 246; 21 diagrams.

During 1894 the value of the products from French mines was 340,646,000 francs. Coal represented nine-tenths of this value. The consumption of coal amounted to 38,000,000 tons, the highest amount yet reached. The average annual pay of miners was 1181 francs. The total number of workmen employed in the mining industry was 146,990. This includes 9200 children under 16 years of age, half of whom worked under ground. The law of November 2, 1892, regulating the labor of children and women, has reduced the number of women to 564, and that of young people between 16 and 18 years of age to 421. There were 289 fatal accidents. The volume also includes statistics upon the employment of steam power in industrial establishments, railroads, and the merchant marine. The steam power in use was equal to 5,900,000 horse power.

Statistisches Jahrbuch des K. K. Ackerbaun-Ministeriums für 1894. Vienna, 1895. Part I; pp. 227; diagrams, 5; maps, 8. Part II; pp. 159.

Part I deals with the statistics of the crops of 1894. The maps illustrate the production of wheat, rye, barley, oats, corn, potatoes, sugar beet, and wine in the different provinces of the empire. Part II deals with the production of minerals.

Statistique Agricole Annuelle. Ministére de L'Agriculture, 1894. Paris, 1895. Pp. 269.

The statistics relate to the crops of France in the year 1894, to animals, importations and exportations of agricultural produce, the provisioning of Paris, the agricultural statistics of Algeria, and the agricultural statistics of foreign countries. These latter are of general interest in making comparisons between the principal countries of the world, as all statistics are reduced to common terms, as hectolitres.

Beitrage zur Statistik der Herzogthums Braunschweiz. No. 12, 1895. Pp. 106.

This number deals largely with the results of the census of 1890. A dozen pages are given to the influence of recent social legislation upon poor relief in the Grand-Duchy of Brunswick. There are four maps showing the density and increase of population, most beautifully graded in shades of one color; for example, in showing density twelve shades of red are used.

Statistical Abstract of the United Kingdom from 1880 to 1894. Forty-second number. London, 1895. Pp. 251.

This contains the tables of preceding issues, and, in addition, includes rates of inland revenue duties. There are also additional tables in regard to fish, and amount of gold minted in Australia.

New South Wales. Statistical Register for 1893 and Previous Years. By T. A. Coghlan, Government Statistician. Sydney, 1894. Pp. 746.

The Wealth and Progress of the New South Wales, 1894. By T. A. Coghlan, Government Statistician. 2 Vols. Vol. I. Sydney, 1895. Pp. 465.

These two are companion works, the former containing statistical tables, and the latter descriptive texts with regard to the social, political, and economic condition of this colony.

New Zealand Official Year-Book, 1895. Wellington, New Zealand, 1895. Pp. 554.

This is of special interest to American students, because of the sections dealing with social economic experiments in the way of insurance, land settlements, and public employment offices which are now being undertaken.

South Australia Statistical Register, 1894. Adelaide, 1895. This is exclusively tabular in form.

Western Australian Blue Book for the Year 1894. Perth, 1895. Pp. 380.

Contains tables of duties as well as statistics.

Statistics of the Seven Colonies of Australasia from 1861 to 1894. Compiled in the Office of the Government Statistician of New South Wales. Sydney, 1895. Pp. 15.

South Australia: Australasian Statistics for the Year 1893. Compiled by the Government Statist of Victoria. Adelaide, 1895. Pp. 24.

These little pamphlets cover the same ground, each furnishing a useful compendium of Australasian statistics during the past 20 years.

Review of the Trade of India, 1894 and 1895. By J. E. O'Connor, Director-General of Statistics. Simla, 1895. Pp. 92.

This volume is of interest as showing the growth of Indian export trade, particularly in cotton textiles. The course of the Indian raw cotton trade is also suggestive. The export of gold in 1894–95 was very large, forming a complete reversal of the ordinary course of trade in this metal. Full statistics of the shipment of gold and silver are to be found here.

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STATE CENSUSES.

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Census Bulletins of Rhode Island. No. 1, August 12, 1895; No. 2, August 21; No. 3, September 25; No. 4, October 31; No. 5, November 9.

The total population of the state is 384,758, an increase of 80,474, or 26.45 per cent, since 1885. The increase between 1875 and 1885 was 46.45, or 17.83 per cent. 19 towns and 4 cities have increased

in population during the last decade. 12 towns show a decrease in population. There are, with two exceptions, interior localities where people are engaged chiefly in agriculture. The city of Providence does not show the increase that was expected. This is attributed to cheap and rapid transit, and low cost of land, which has influenced thousands of people to take up their residence beyond the city limits.

First Triennial Report of the Bureau of Statistics of Utah for the Year Ended December 31, 1894, with Census of 1895. Salt Lake City, 1895. Pp. 54.

A census of this Territory, now a State, was taken during February and March, 1895, by a house-to-house canvass. The population was 247,324, as compared with 207,905 in 1890 and 143,963 in 1880. In each 1000 inhabitants there are 513 males and 487 females. Salt Lake City county has about one-fourth of the population, and from the other statistics, apparently, about one-half of the wealth of the State.

The Census of Michigan, June 1, 1894. Bulletin No. 1, December 7, 1894. *Total Population and Population as Native and Foreign Born.*

The population of the State at this last State census was 2,241,454, an increase of 147,565, or 7.04 per cent, since June 1, 1890. The number of native inhabitants was 25.46 per cent of the total population. In 1890 it was 25.97 per cent. The proportion of the population foreign born is now only one per cent less than in 1884.

Bulletin No. 3, February 25, 1895. *Farms Classified According to Tenure; Dairy Products.*

The total number of farms in the state is 177,952, of which 149,093 are cultivated by owners, 9,127 are rented by fixed money rental, and 19,732 are rented for shares of production. There is an increase since 1884 of 13.07 per cent in the total number of farms and in percentages of each kind, in the number rented for fixed money rental, and the number rented for shares of production.

Bulletin No. 4, March 25, 1894. *Live Stock and Wool.*

Bulletin No. 5, June 19, 1895. *Farms and Farm Valuations.*

The value of the farms, including land, fences, and buildings, is shown to be $528,249,503, a decrease of $43,193,958, as compared 1884.

Bulletin No. 6, June 25, 1895. *Poultry, Eggs, Meadows, and Silos.*

Bulletin No. 7, August 30, 1895. *Parent Nativity.*

In each one thousand inhabitants the parents of 491 are both natives, the parents of 462 are both foreign born, and the parents of 119 are one native and one foreign born.

Bulletin No. 8, September 30, 1895. *Births by Sex, Color, Parent Nativity, and Grand-Parent Nativity.*

Number of births is reported at 26.7 per 1000 inhabitants. In the cities the rate was 27.86, and in the country 26.06. Males were 51.83 per cent, and the females 48.17 per cent.

Bulletin No. 9, October 30, 1895. *Manufacturers, Mines, and Fisheries.*

Bulletin No. 10, December 10, 1895. *Illiteracy.* Pp. 15.

The total number of illiterate persons 10 years of age and over is returned at 95,037, of whom 70,772 can neither read nor write. This is quite in harmony with the return of the United States Census in 1890, which gives 95,914. The number of illiterate persons is 16,176 less than in 1884. 5.3 per cent of the total male population of 21 years of age and over, or those of the voting age, can neither read nor write.

LABOR STATISTICS.

Eleventh Annual Report of the Bureau of Labor Statistics of Connecticut. Year ending November 30, 1895. Pp. 280.

The greater part of this report is devoted to a special consideration of the subject of poor relief, the treatment being both descriptive and statistical. The number of persons aided in almshouses in 1894 was 3847 as compared with 3292 in 1892. The net expense of maintenance was $207,503. The total number aided in almshouses and by outside relief was 17,729; and the total cost of relief was $994,615. A short section is given to building and loan associations. Manufactures are analyzed on the Massachusetts plan of comparisons between the same number of establishments. It is shown that on July 1, 1895, there were 112,002 persons on the pay-rolls of the different manufacturers from whom data were obtained, the same

establishments in 1894 reporting 98,617 employees. Manual training also claims a hearing in this volume, and in the last three pages is the first annual report of the new State Board of Mediation and Arbitration.

Sixth Biennial Report of the Bureau of Labor Statistics for Iowa, 1894–95. Des Moines. Pp. 199.

The Commissioner complains of lack of appropriation and obstructions placed in his way by manufacturers. The correspondence method of obtaining information was first tried, but out of 5000 blanks mailed to wage earners, only about 800 replies were received. The statistics of wage earners are given on the plan of individual statements of workmen. These trail out their dreary length in 150 pages, with no tables of summaries that are capable of being used. Undoubtedly such statistics are of value, but it is questionable if, presented in this form, they can have much of any practical service for the particular constituency to whom they are directed. It would be much better to take a smaller field of work and do it more thoroughly, with summaries and editorial analysis.

Tenth Annual Report of the Bureau of Labor and Industry, Kansas, 1894. Pp. 230.

About one-half of the volume is devoted to the subject of contract convict labor and prison reform. The evils of convict labor in Kansas are recognized, and fresh data collected for that State. Pages 107 to 168 treat of irrigation. The remainder of the report contains the reports of wage earners, female and male. Here the plan of individual statement is abandoned, and averages used very freely and with questionable looseness. For example, in treating of blacksmiths, reports were received from 19. It is then stated: "The average number of years of a wage earner is 8.8, and the average time worked at present occupation, 9.5. The average annual expenditures amount to $483, leaving an annual surplus of $30. The average present age is 36.6," etc. Such averages drawn from so few as typical of an industry or a trade may be very misleading.

Twelfth Annual Report of the Bureau of the Statistics of Labor of New York for 1894. Albany, 1895. Pp. 674.

This report treats chiefly of labor organizations. There was expended for benefits in 1894, by 474 organizations with a membership

of 121,957, $511,817. The out-of-work benefits amounted to $106,801. Detailed information is given from these trade unions with regard to the use and influence of improved machinery in the respective trades. 169 trade and labor unions, with a membership of 48,411, report an eight-hour working day; 13 organizations, with a membership of 6595, report that their hours of work range from eight to ten a day; 142 organizations, with a membership of 18,925, have a nine-hour day.

The last part of the report contains an interesting account of the proceedings of the Tenth Annual Conference of the National Association of the officials of the Bureaus of Labor Statistics, held in Washington in May, 1894.

Third Biennial Report of the Commissioner of Agriculture and Labor of North Dakota for the Year Ending June 30, 1894. Jamestown, 1894. Pp. 332.

This report treats chiefly of dairy and farming industries. Only a few pages are given to industrial statistics.

Annual Report of the Secretary of Internal Affairs of Pennsylvania for 1894. Part III. *Industrial Statistics.* Albert S. Bolles, Chief.

This volume deals with the subjects of Women in Industry, pp. 446; Strikes during the Year 1884, pp. 13; Manufacture of Pig Iron, pp. 128; Statistics of Manufactures, pp. 113; Mine Accidents, pp. 29. The investigation on women in industry is the first ever undertaken by the Pennsylvania Bureau. Within the past six months it is noted that women have been employed in one of the tin plate mills at Pittsburg. The details are arranged in tables from several thousand reports, showing the nationality, home conditions, weekly wages, methods of payment, hours of labor, time allowed for vacation, etc. In the building trades it is stated that there is less regularity in employment than during the previous year. There are several hundred extracts from letters from artisans with regard to the apprenticeship system. This matter, however, has not been digested, and consequently it is somewhat difficult to derive an opinion as to what the general sentiment is. In 1893 there were 455 fatal accidents in the mining of anthracite coal, and 131 in the bituminous region.

Report of the Commissioner of Labor of West Virginia, 1893–94. Charleston, 1894. Pp. 210.

This report appears to be a scrap-book of various statistics, which the Commissioner was able to secure in order to present a volume which would meet official demands.

Report of the Chief Inspector of Factories and Workshops for the Year 1894. London, 1895. Pp. 517.

The number of accidents reported to the chief inspector of factories during the year ended October 3, 1894, was 448 causing death, 106 causing amputation of hand, 1349 causing amputation of a part of the hand. The total number of accidents of all kinds was 9749.

The February issue of the *Labor Gazette* (London: Labor Department of the Board of Trade) contains preliminary figures with regard to trade disputes in 1895. 772 disputes are classified, involving 243,500 persons; 46,200 work people were successful, 96,500 partially successful, and 72,300 unsuccessful. The percentage for 1895 of those unsuccessful was 31.4 as compared with 42.1 in 1894 and 12.2 in 1893. The disputes affecting the largest number of persons were those in the boot and shoe trades, in the textile trade, and in Dundee.

The following reports have been received from the *Office du Travail*, Ministry of Commerce, Paris: —

Notices et Comptes Rendus. Fascicule III. *Statistique des grèves survenus en France pendant les années 1890 et 1891.* Pp. 121.

—— Fascicule V. *Résultats statistiques de l'assurance obligatoire contre la maladie en Allemagne.* Paris, 1893. Pp. 134.

—— Fascicule VI. *Résultats statistiques de l'assurance obligatoire contre la maladie en Autriche.* 1893. Pp. 147.

—— Fascicule VII. *Statistique des grèves survenus en France pendant l'année 1892–93.* Pp. 186.

Salaires et durée du travail dans l'industrie Française. Tome I. *Département de la Seine*, 1893. Pp. 611. Tome II, pp. 760.

Industries extractives, products alimentaires, industries chemiques, caoutchouc, papier, cuirs et peaux, textiles, dans les département autres que celui de la Seine. Paris, 1894. Pp. 760.

La petite industrie (*Salaires et durée du travail*). Tome I, *l'Alimentation à Paris*, 1893. Pp. 300.

De la conciliation et de l'arbitrage dans les conflits collectifs entre patrons et ouvriers en France et à l'etranger. Paris, 1893. Pp. 610.

Etude sur les deniers résultats des assurances sociales en Allemagne et en Autriche. Part I, *Accidents.* Paris, 1894. Pp. 180.

Statistique des grèves et des recours à la conciliation et à l'arbitrage survenus pendant l'année 1893. Paris, 1894. Pp. 425.

Statistique des grèves et des recours à la conciliation et à l'arbitrage survenus pendant l'année 1894. Paris, 1895. Pp. 304.

Hygiène et sécurité des travailleurs dans les ateliers industriels. Legislation Française et Etrangère. Paris, 1894. Pp. 659.

Etude sur les derniers résultats des assurances sociales en Allemagne et en Autriche. Part II, *Maladie, Ivalidité, et Viellesse.* Paris, 1895. Pp. 229.

CRIMINAL STATISTICS OF ENGLAND.

Judicial Statistics of England and Wales. Reprint of pp. 71–96 of the *Introduction to the Judicial Statistics for 1893.* London, 1895. Pp. 28; diagrams, 6; maps, 4.

This exceedingly valuable pamphlet on criminal statistics discusses statistically the increase or decrease of crime, the tendency to mitigation of sentence, previous conviction of criminals, crime in relation to age and sex, the geographical distribution of crime in England and Wales, and monthly fluctuations of crime.

It is concluded that during the 20 years, from 1874–93, the number of crimes of violence against the person has diminished in a very marked degree, and that crimes against morality have apparently increased. This increase is, in part at any rate, due to the creation of new offenses by legislation. The classes of crimes against property show a marked diminution as compared with the population. It is not clear that there is any relationship between either pauperism or the marriage rate and the quantity of crime. A diagram illustrates this point. On the tendency to mitigation of sentence it is remarked that the total decrease in the number of committals counts for only 3.5 per cent, and the diminution in the average length of sentences was such during the past ten years as to affect the prison population to the extent of 29.5 per cent.

The four maps illustrate the distribution, in the counties of England and Wales, of crimes against property, of violence against the

person, against morals, and of drunkenness. The figures of county distribution are liable to be affected by the greater or less activity of the police. As a sociological result of this study, it is suggested that a race which is most innocent while it remains in an agricultural state becomes the most corrupt and criminal when concentrated in cities. The mining counties stand very badly in the matter of drunkenness and crimes of violence, but as regards crime generally they are rather below the average.

For the first time the English criminal statistics show monthly fluctuations as well as seasonal. The conclusion is that the fluctuations are not so much due to human beings being directly dominated by variations of temperature as to the fact that opportunities for committing a large number of crimes are greater at one time of the year than another. A natural explanation can be given without having recourse to the theory of some connection between crime and temperature. The maps are well constructed, and in an interesting way complete the early studies which appeared in the Atlas of M. Guerry, published in 1864.

ENGEL'S FAMILY BUDGETS.

Die Lebenskosten belgischer Arbeiter-Familien früher und jetzt. Ermittelt aus Familien-Haushaltrechnungen und vergleichend zusammengestellt. By Dr. Ernst Engel. (*Bulletin de l'Institut International de Statistique.* Tome IX. Première Livaison. Rome, 1895.

The one general induction in the department of economic consumption which has obtained wide currency and been of definite use to many students is the so-called Engel's law regarding the proportion of total expenditures devoted by families in different classes to various specified purposes. Many have talked about the importance of magnifying consumption as a branch of economics, but very few have settled down to the hard work of following their own advice. Dr. Ernst Engel had the courage and patience to undertake the statistical investigation of the subject forty years ago, and the generalizations he then made are still conspicuous, partly by virtue of their value, and partly by virtue of the fact that so little else has been done in the same field. At the age of seventy-four, Dr. Engel, no longer drawn aside by official duties, returns to the subject which interested him at

thirty-five, and proposes to gather together, analyze, and make comparable all the household-budgetary statistics which have been collected in the different countries. The first installment of his work is that now presented, and the others will appear as fast as they can be prepared. A general review of the results he reaches can best be postponed until the entire field has been covered, but the present monograph is prefaced by a discussion of the purposes, methodology, and history of budgetary statistics of households, which is of independent and immediate importance.

In the paper in which Dr. Engel announced the "law" that bears his name, originally printed in 1857, and reproduced in full in the appendix to the present monograph, he begins by discussing the law of population, and holds that we can not reach satisfactory conclusions regarding actual, possible, and desirable densities of population until we have balanced our study of production by an equally exhaustive study of consumption. His proposition, "that the measure of expenditure for food (*Ernährung*), other things being equal, is a particularly reliable measure of the welfare of a people,"* has manifest bearings upon the subject of population, which he was considering. This is especially clear when the proposition stated is viewed in the light of a corollary of his leading result: "The poorer a family is, the greater is the proportion of its total expenditures which must be used to procure food.† His whole discussion of "normal consumption" anticipates and gives a statistical rendering to Marshall's recent definition of "necessaries."

By his study of consumption alone Engel came to appreciate the modifiable nature of human beings. This is a central thought in modern economics which many students have only recently been coerced into accepting by the triumph of evolutionary philosophy. The value of such studies as Engel's in enabling us to trace the incidence of indirect taxes is too evident to need emphasis.

These specimens of what has been done by the inductive study of consumption give the best idea of what Dr. Engel considers possible by further studies in the same field. It is fortunate that a man with a faculty for sound generalizing has taken the great mass of household budgets in hand, because many who have worked assiduously in collecting such statistics have failed to draw general conclusions from them. Ducpetiaux was not very successful in this line, and the

* *Anlage*, p. 29. † *Anlage*, p. 28.

multiplying volumes of LePlay and his school have made but scant impression on economic philosophy. The collection and perusal of the budgets has given many individuals a more lively appreciation of certain social and industrial facts, but the different monographs of families and household accounts have been so little comparable that general results have not been reached.

In his treatment of methodology, Dr. Engel's most striking innovation is an attempt to secure this great desideratum of general comparability. Roughly expressed, it may be said that he tries to reduce all families to a common denominator. The earlier investigators tried to secure the facts about "typical" families. For the early Belgian investigations the typical family was taken to consist of father, mother, and four children of the ages of 16, 12, 6, and 2, respectively. Manifestly, it might not be easy to find exactly typical families in each locality, in each occupation, and at exactly the time when the study was to be made. Dr. Engel proposes to take as a unit for the comparison of families of diverse membership the infant during its first year of life. Older persons will be reckoned as multiples of this unit, according to a method roughly proportioned to their annual increase in weight and height. Ten per cent is to be added to the unit for each year of age, and it is assumed that women reach maturity at twenty and men at twenty-five. The value in units of the "typical" family of the Belgian investigation would be —

	Units. "Quets."
Father,	3.50
Mother,	3.00
Child of 16,	2.60
Child of 12,	2.20
Child of 6,	1.60
Child of 2,	1.20
Total,	14.10

Such a family would represent 14.10 units, and would be readily comparable with other families having more or fewer children, or families having other adults than the parents, or containing no children at all. The author proposes to give this unit the name of "Quet," from Quetelet. To compare conditions in different times, localities, or occupations the families will be reduced to Quets, and the comparison then made. As an illustration the author takes the fact that 2490 American families spend in a year $289,000 for animal food, while 104 German families spend $8170 for the same object. Redu-

cing the families in each group to Quets it is found that the American expenditure for animal food is $12.30 per year per Quet, while that of the Germans is only $7.79. Evidently, if we accept the reduction to units as legitimate, the new way of presenting the facts is much more instructive than the old.

That the unit assumed is to a considerable extent arbitrary Dr. Engel admits, but he still thinks that calculations based upon it reflect the facts with sufficient accuracy. It would seem that its extensive use would eventually supply material for its own correction if such correction be necessary. That is, if families of similar conditions and habits, but of diverse constitution as to the ages of members, are not similar, when compared unit for unit by different classes of expenditure, it would indicate that correction lines must be run in the fundamental assumptions.

In the historical sketch of household budget statistics Dr. Engel reviews Eden's "State of the Poor" (London, 1797), and all later attempts to present statistical pictures of family incomes and expenditures. Nearly all extended investigations of the kind have been undertaken in consequence of the existence of "hard times," and the classes studied have been mainly the laboring classes, or the actually destitute. For Dr. Engel's purposes the lack of family budgets of the well-to-do and wealthy classes is a serious defect. It is, indeed, strange that, at least in this country, there has been no demand from the laborers' organizations for an exhaustive official study of the household budgets of the rich; an investigation to determine how the rich get their incomes and how they spend them. It is a reflection on the originality of our labor leaders that they have waited for a scientist to ask for such an inquiry.

A. G. WARNER.

EDUCATIONAL STATISTICS.

Report of the Commissioner of Education for the Year 1892–93. 2 Vols. Pp. 2153. Washington, 1895.

As usual this report appears somewhat late, but as a large part is descriptive no serious injury is done. A chapter is devoted to illiteracy, not only in this country, but also in Europe, compiled from official reports, Hübner's statistics, and other sources. The statistics of ele-

mentary schools in foreign countries are given with the latest returns. In the study of city schools it is noted that the average length of the school term is being further decreased, and that there is a great increase, both relative and absolute, in the cost of the schools. In the North Atlantic division the average length of the school term has decreased one day. While the enrollment of pupils in the cities under consideration increased 4.86 per cent during the year, the increase in total expense was 8.96 per cent.

Another attempt is made to ascertain the kinds of schools in which students entering college are prepared. Not much success attends the efforts of the bureau in this direction.

The income reported by universities and colleges was $14,601,034. Of this amount $5,466,810 was derived from tuition fees; 11.6 per cent was appropriated by cities and States; 4.7 per cent appropriated by the general government.

The total number of medical students was 19,752; the number of law students was 6776.

A large part of the first volume is devoted to the study of education in foreign countries, and to education at the Columbian Exposition, including European and American criticism. There is also a section devoted to the World's Library Congress.

Volume Two contains documents illustrative of American educational history; a sketch of the National Education Association; a chapter on the education of the negro, with statistics of institutions for educating the colored race; a chapter on pecuniary aid for students in universities and colleges, showing the number of scholarships that are available in various institutions; and chapters on the university extension movement and medical education.

ITALIAN IMMIGRATION.

The following is taken from the *Bulletin of the American Geographical Quarterly*, New York, December, 1895. It is an interesting example of statistical method.

The Bulletin of the Italian Geographical Society, in a note on the Italian population of New York, makes the following statement: "The American statistics cannot be taken as a basis. It will be sufficient to quote the fact that the census of 1890 gave only 182,000

Italians living in the United States, while it is certain that the number then approached and now exceeds 500,000."*

A wise man has said that nothing is certain but death and taxes. There may be, at the present time, 500,000 Italians in the United States, but the number of 182,580 in the Census returns of 1890 is, nevertheless, to be accepted with confidence.

The Italian immigration was for many years insignificant. It amounted for the 60 years, 1821–80, to 87,774, according to the statistics of the Italian Government,† but according to the tabulated statement in the U. S. Census Report for 1890 (*Population*, Part I, p. lxxx) the total was 81,249. The difference is accounted for by the immigration into Canada and British Columbia, which are frequently included, in the Italian returns, with the United States, and in some degree by the fact that the American Census is taken in the middle of the calendar year.

In 1880 the number of resident Italians was 44,230. There were added to these in the next 10 years 208,792, and the apparent total for the year 1890 is, therefore, 253,022.

From this total must be deducted, however, the mortality for the 10 years, and the immigration into Canada.‡

It is well known that for the most part the Italians take up their abode in the large cities of the country. The annual death rate of the white population in 12 of these cities was: —§

Newark, ...	28.67 per 1000	Boston, ...	24.62 per 1000
New York, . . .	28.47 " "	San Francisco, . .	23.57 " "
Chicago, ...	21.03 " "	New Orleans, . . .	25.41 " "
Philadelphia, . .	22.28 " "	Buffalo, ...	19.83 " "
Brooklyn, ...	25.41 " "	Baltimore, ...	22.61 " "
St. Louis, ...	18.15 " "	Pittsburg, ...	21.56 " "

The average of these figures is 23.47; but those who are acquainted with the conditions of Italian life in America cannot doubt that the death rate among people of that community is very nearly as high as that recorded for the city of New York. If the annual rate were no

* Non si possono prendere per base le statistiche americane; bastera citare come il censimento del 1890 dasse per residenti agli Stati-Uniti soli 182,000 Italiani, mentre è certo che allora avvicinavano e ora passano il mezzo milione.—*Bollettino della Soc. Geog. Italiana*, Ser. iii, Vol. viii, Fas. x, p. 325.

† The figures are taken from the *Statistica della Emigrazione Italiana all'Estero nel 1881, confrontata con quella degli Anni Precedenti, ecc. Roma, 1882.* Published by the Direzione della Statistica Generale.

‡ This latter, though an unknown quantity, must not be forgotten.

§ *Compendium of the Eleventh Census*, 1890. Part II, Miscellaneous Statistics, p. 5.

higher than 23.47 per 1000 it would account for 59,353 persons of the apparent total for 1890, and leave 11,089 for the Canadian quota. If the death rate is estimated at 27 per 1000 the apparent total for 1890 will be reduced to 184,712, which exceeds the Census figures for 1890 by 2132 persons, to be looked for in Canada and British Columbia.

There has been a great increase in the volume of the immigration for the past five years. The *Almanach de Gotha* for 1895, taking its figures from the Italian official publication, makes the number of departures for the United States alone, in the four years, 1890–93, 185,029. An approximate total for the beginning of the year 1895 may be reached by adding together these figures: —

Census return for 1890,	182,580
Immigration, 1890–93,	185,029
Estimate for 1894,	50,000
	417,609

In a question of this kind it does not appear that any other authority can take the place of the official census.

PERMANENT CENSUS BUREAU.

The following joint resolutions, relating to the federal census, have been passed by Congress: —

Whereas representatives of various Governments which make decennial enumerations of the people are making efforts to secure uniformity in the inquiries to be used in future censuses: and

Whereas also it is expedient to give early consideration to some comprehensive plan for the establishment of a permanent census service: Therefore,

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, that the Commissioner of Labor, now in charge of the Eleventh Census, is hereby authorized and directed to correspond with the census officers of other Governments for the purpose of securing uniformity in the inquiries relating to the people to be used in future censuses; and that said Commissioner is also hereby directed to report to Congress for its consideration, as soon as practicable, a plan for a permanent census service.